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Reconstructed Wisconsin Paper Mill to Resume

Newly Organized Ward Paper Mills At Merrill to Start Operating in February — Installation of New Beaters and Bleaching Equipment Rushed — Machine Being Overhauled and Remodeled — Second Machine to be Built.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., January 18, 1937.—Hopeful of starting operations some time in February, the newly organized Ward Paper Mills at Merrill, Wis., is rushing to completion the installation of new beaters and bleaching equipment. The present paper machine is being overhauled and remodeled in readiness for the manufacture of medium and heavy weights of the highest grades of sulphite.

As soon as the mill is in production work will proceed on the installation of a second paper machine. The work is being supervised by Abe M. Vanderberg, of Kalamazoo, Mich., the newly appointed mill superintendent, who has arrived at Merrill to take over his new position. Changes and enlargements have been designed by Orbison & Orbison, of Appleton, Wis., paper mill engineers. Approximately $150,000 will be spent for the improvements and repairs. When completed, a crew of 85 to 100 men will be employed regularly.

Joseph M. Ward, of Detroit, Mich., manager of the mill, and D. C. Everest, Wausau, Wis., co-purchaser with Mr. Ward of the former Grandfather Falls Paper Company, are planning to form a corporation at a later date.

New Office Building for Kimberly-Clark Completed

After eight months of construction work by the C. R. Meyer & Sons Company, of Oshkosh, Wis., the new office building of the Kimberly-Clark Corporation at Neenah, Wis., has been completed. It is a completely modern and up-to-the-minute edifice, built of brick, having U shape, and permitting of a lawn and landscaping on the street side. A large parking yard for employees is provided at the rear.

An attractive interior built for quietness, roominess and ideal working facilities provides twenty offices on the first floor of the industrial relations and land departments, twenty on the second floor for the manufacturing department, and twelve on the third floor for the engineering division, including a mammoth drafting room. In the basement is a conference room and caucus chamber for the meetings of the General Mill Council, and a control room for the new dial telephone system permitting inter-office calls without going through a switchboard. Twenty trunk lines are used on the switchboard.

Walls, except in the executive offices, are of Masonite, with wood trim. Floors are of asphalt tile. The walls of the executive offices are either panelled or painted. Windows are of steel with wooden sills, and have either storm sash or screen on the inside.

Air conditioning will be furnished throughout, using steam from the experiment mill to heat that which is supplied through ventilators. It will be cooled in the summer months. A thermostatic arrangement on the roof regulates the temperature in the air conditioning room. The air is also humidified.

Entrance to the building will be made as before through the old office building. Open hallways connect the first and second floors, and an outside runway gives access to the third. Gene Birchler, Kimberly-Clark engineer, supervised the construction work.

Chemist Reclamation Activities

Operations will be started in about two weeks by the Salvo Chemical Corporation in a new factory 60 x 120 feet at Rothschild, Wis., and represents another conversion step in the chemical reclamation activities of the Marathon Paper Mills Company through the Howard process.

The Salvo Chemical Corporation is owned by a financial group with headquarters in New York City, headed by L. F. V. Drake as president. The resident manager is F. J. Zimmerman, a leading stockholder, who for many years was chief production chemist of the American branch of Burroughs, Wellcome & Company, international drug house. He has been in Wausau, Wis., about a year arranging for the manufacture of products under the process developed by Guy C. Howard, of the Marathon company.

Products in the "fine" chemical field will be produced by the Salvo company using as raw materials the reclaimed sulphite liquor waste after its treatment by the Marathon's new reclamation plant. A contract has been entered into to supply the Salvo company with large quantities through pipe lines to its plant. The first product to be placed on the market will be vanillin, the base of all vanilla flavorings. Capacity is sufficient to supply most of the United States consumption and allow for foreign expansion. Another chemical will be placed in production in about ninety days, the nature of which has not been divulged.

Wisconsin Paper Group Meets

F. C. Heinritz, of the Appleton Coated Paper Company,

(Continued on page 28)

Active Newsprint Spot Market Predicted

Many Newspaper Publishers Have Difficulty In Securing Adequate Supplies — Operating Mills Working at Capacity With Prospects of Even Larger Consumption During Coming Year—Still Higher Prices Anticipated

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 18, 1937.—With the operating newsprint mills here working to capacity, and with prospects of an even larger consumption of newsprint during the coming year, it is considered inevitable that before long a substantial spot market will develop, and that for contract deliveries it will not be long before the increase of $1.50 per ton which went into effect at the beginning of this year will give way to a still higher price.

That the present price of $42.50 per ton f. o. b. New York and Chicago is still not high enough to permit a profitable production is agreed.

Morris M. Wilson Discusses Situation

Morris M. Wilson, president of the Royal Bank of Canada, which is intimately associated with the newsprint industry, made this clear at the annual meeting of the Bank a day or two ago. When he said that while the slight increase in the price of newsprint and the heavier volume of sales had brought encouragement to the industry, "it must be borne in mind, however, that costs, notably wages, have also increased; therefore the improvement in financial return is the result of operating at a higher rate of capacity.

"With few exceptions, the thousands of investors at home and abroad who created this industry by their courage and enterprize and by the investment of many millions of dollars, have been without any return on their investment for a number of years. It is to be hoped that this condition will not long continue."

Considerable significance is attached here to a bulletin sent out last week by the Paper Committee of the A.N.P.A., calling attention to the fact that many publishers had been having difficulty in buying paper and that it was known that a number of mills were a month behind on orders.

The committee attributed this to the practice of ordering on a hand-to-mouth basis and expressed the opinion that there should be no shortage as the North American newsprint industry was capable of producing 800,000 tons more of newsprint, at current prices, than were produced in 1936. It recommended ordering annual requirements in equal monthly quantities, which would enable publishers to build up stocks during the quiet summer months for the heavy consuming months in the fall.

It is held here that this shows publishers are aware that consumption is uncomfortably close to practical capacity, and by practical capacity is meant capacity that can be utilized without heavy capital expenditures for conditioning and renovating idle and more or less obsolescent equipment.

The feeling among operators is that the present price would not warrant such capital expenditures and that before they come prices will have to be increased. If a spot market develops in the proportion expected it is held that there are only two companies which could supply it, and they are hardly likely to do so unless they see a profit in it.

While there is no means of confirming it, the gossip here is that more than one large American publisher has offered to tear up existing contracts at $42.50 per ton and pay a higher price for current supplies if that price can be assured for 1938 deliveries. Some speak of offers of $50 per ton for such agreement; others speak of $60 per ton being offered.

As has been emphasized, this is only gossip, but it shows the way the wind is blowing. The belief of higher prices soon finds reflection in the marked activity in newsprint securities on the Montreal Stock Exchange and the substantial and continued rise in the price of those securities.

Price Bros. Reorganization Developments

An important development of the week has been the cancellation by the trustees for the bondholders of Price Bros. & Co., of the proposed sale by auction, on February 3, of the properties and assets of that company which had already been advertised extensively in the newspapers, according to the legal formalities in such cases. This is taken to indicate that the bondholders will accept the compromise plan for reorganization put forward by the company.

The trustee for the bondholders had asked for redemption of the bonds in gold or its equivalent and payment of a premium of 7½ per cent on the principal. It is understood that they have dropped the stipulation for payment in gold or its equivalent. It is estimated that something over $15,000,000 will be required to pay off the bondholders.

St. Regis Report to Show Profit

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., January 18, 1937.—Announcement was made here last week at a meeting of stockholders of the St. Regis Paper Company that the annual report would show a substantial profit for the first time since 1931. Officials stated that the past year has shown marked improvement in conditions and earnings generally throughout all branches of the pulp and paper industry. Among the directors re-elected were B. B. Taggart, C. R. McMillen, C. B. Martin, R. B. Maltby, H. E. Machold, R. K. Ferguson, W. K. Dick, F. L. Carlisle and J. Buckley. Approval by the stockholders of an amendment to the charter permitting the company to engage in business in any state in this country or in foreign countries was given and by this the concern is placed in a position to simplify its corporate structure by merger or consolidation with its subsidiaries A review of operations during the past year and the outlook for the future were the principal topics of discussion.

Government Paper Awards

WASHINGTON, D. C., January 20, 1937—The Whitaker Paper Company has been awarded the contract for furnishing the Government Printing Office with 3,000 pounds of No. 1 gummed kraft paper in 24" rolls at 8.1 cents per pound, bids for which were received on January 6.

The same company will also furnish 10,000 sheets of 24 x 36 white cloth lined paper at $84.75 per M sheets. The Mathers-Lamm Paper Company will furnish 1,466 pounds (5200 sheets) of 31½ x 31½ white sulphite index paper at 6.3 cents per pound. Bids for these items were received on December 28.

The R. P. Andrews Paper Company will furnish 4,000 pounds (3,200 sheets) of 20 x 30 best quality, hard rolled binders board at 4.6 cents per pound, bids for which were received on December 23.

Paper Business Fairly Buoyant In Chicago

Demand for Fine Paper Persistent — Bonds and Ledgers Moving Into Consumption Freely—Material Rise In Sulphite Bond Prices Reported—Kraft Paper Exhibits Strength—Newsprint Outlook Better—Waste Papers Steady.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., January 18, 1937.—Easily the feature of the Chicago paper market this week, at least from the standpoint of those interviewed, was the material rise in sulphite prices affecting four grades and giving further conclusive proof of the fact that other lines are likely to soon follow suit. With number one sulphites boosted around ten cents and the next three grades in the neighborhood of twenty-five cents, there was definite indication of even further strengthening. The local markets are reported to have responded well to the increases with demand running heavy. Krafts had another good week, moving into the fringes of higher ground as raw materials and mill production pointed the way to hesitant buyers. Books and covers showed comparable strength, with the former reporting a widening of demand and interest in larger orders. Newsprint markets showed strength as business in general forged along despite the labor situation. Groundwoods were said to be very firm with mills considerably behind in production. Bonds and ledgers were in good demand during the entire week with the sulphite bonds, of course, getting the most news attention. Waste papers were steady in most grades, with certain lines, including old book and fine cuttings, hitting for higher ground as the results of the general conditions make themselves felt.

Huyck Sound Film Shown

Seventy paper mill representatives and executives of the trade press attended a motion picture prepared by F. C. Huyck & Sons, of Albany, New York, held at the La Salle Hotel, Chicago, January 15. The preview opened the way for a nation wide display of the sound film on the manufacture of wool felts for the paper industry, the company having perfected seven such films for national distribution.

H. M. Ashby, president of F. C. Huyck & Sons, came on from Albany to preside at the meeting, while William Greeley, sales manager at the plant, and Frank P. Knack, resident sales representative, were also present. Mr. Ashby pointed out that the film was the answer to those who visited the plant, became deeply interested in the exacting processes required and expressed the wish that others in their own industry might benefit from a personal examination of the mill. The Huyck plant is an affiliate of the Kenwood Mills, the latter making blankets, while the former specialties only in the making of wool felts for the paper trade.

Mr. Ashby explained that the taking of the 1500 feet of film also taught the company itself a number of things about the making of the product. Produced by Caravil Productions and equipped with Bell & Howell Filmo Sound, the interesting film clearly depicted the extreme importance of three major factors in the production of wool felts—porocity, durability and finish.

The film was exceedingly interesting, the continuity excellent and the descriptions understandable to a marked degree. It is confidently expected that the explanatory and educational film will pave the way for further efforts to create a more widespread understanding of the processes involved in the making of paper, paper products and materials used in the manufacturing of paper.

News of the Industry

The Container Corporation of America directors this week increased the annual dividend rate on the capital stock of the company to $1.20 from $1 by the declaration of 30 cents regular quarterly dividend payable February 20 to stock of record as of February 5.

The National Paper Box Manufacturers Association has perfected plans for its annual meeting to be held in Cincinnati on May 23 to 26. The Western Division, whose roster contains the names of prominent Chicago and midwestern executives, is reported to be planning to hold its annual meeting at the same time. The Western Division has for its chairman R. H. Ritchie, of the Set-up Paper Box Association of Chicago.

Recent reports from Dun & Bradstreet indicate that both manufacturers and wholesalers of paper boxes have made excellent progress during the past year with distribution of folding boxes, corrugated and solid fiber shipping containers during the entire year running from 10 to 20 per cent larger than the comparative 1935 total. Especially were the third and fourth quarters of the year good, according to the business analysts.

Dun & Bradstreet also point to shortage of some raw materials as a distinct possibility and report that some paper mills have been running under current consumption of paper for corrugating to the extent of around 4000 tons weekly. Optimism is also dragged out of the forecasting bag with more concerns on a better operating basis, inclining sales trend and widening use of paper boxes listed as reasons for this anticipated betterment within the industry. Folding division, set-up boxes and corrugated boxes all shared in the general improvement.

The American Corrugated Box Company, 1011 West 21st street, Chicago, has recently been incorporated with 100 shares, no par value, capitalization. The company is manufacturing corrugated paper boxes and containers.

Proposes Tax on Pulp and Pulpwood

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Jan. 20—Representative Dimond has introduced a bill in the House "to raise revenue by taxing certain wood pulp and pulpwood and manufactured products thereof." The bill (H. R. 1548) which has been referred to the House Committee on Ways and Means, is as follows:

That section 601 (c) (4) of the Revenue Act of 1932 is amended by inserting before the period at the end of the first sentence thereof, the following: "Pulpwood, $2 per cord of one hundred and twenty-eight cubic feet; unbleached chemical wood pulp, $7.50; and bleached chemical wood pulp, $10 per short ton; mechanically ground wood pulp, $4.50 per short ton; *Provided,* That any products manufactured from ground wood pulp or chemical wood pulp shall pay a tax based on the tonnage of ground wood pulp or chemical wood pulp used in their manufacture, at the rate above specified with respect to certain ground wood pulp and chemical wood pulp; except as to products composed of ground wood pulp or chemical wood pulp against which a tax or duty is otherwise imposed."

Pulpwood Supply Co. Chartered In Ontario

Empowered to Buy, Sell and Deal in Pulp and Pulpwood, Paper and Other Products — Spruce Falls Pulp & Paper Co., and Kimberly-Clark Corp., Interested In New Venture — Cost of Project Estimated At $250,000.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., January 18, 1937.—A provincial charter has been granted to Pulpwood Supply Company, Ltd., with headquarters in Toronto and a capital stock divided into 100,000 shares without nominal or par value, provided that the aggregate consideration of the issue shall not exceed $150,000 in amount or value. It is understood that the interests behind the Pulpwood Supply Company are those associated with the Spruce Falls Pulp and Paper Company, Ltd., of Kapuskasing, Ont., and the Kimberly-Clark Corporation of Neenah, Wis. The company is empowered to carry on a general lumber business in all its branches, as well as buy, sell and deal in pulp and pulpwood, paper and other products. The company plan to take out 100,000 cords of pulpwood during the first year of operation in Ontario, with an attendant bush hire of over 2,000 men. Under arrangement with the Ontario Government, the wood will be cut in the Long Lac district, and as announced previously, the province will provide the means of transportation to and from the watershed, which will mean the construction of a dam at the northern end of Long Lac and the building of several canal routes for the purpose of diverting certain waters from their northerly course into a southern flow, with an outlet in Lake Superior. The estimated cost of the project is $250,000. which will be charged against the company and spread over a period of twenty years.

British Group Plans New Pulp Mill

It is understood that an early start in construction of a $2,000,000 pulp mill on the old Brunette property at Sapperton, B. C., is contemplated. H. L. Edmonds, K. C., New Westminster, is the legal representative of a British group behind the project. The names of the English owners have not yet been made public. In addition to the local plant in Sapperton, it is expected there will be two other mills in the up-coast country to furnish raw material for the Sapperton plant. Construction will be carried out in units. Large dock space will be built and also a viaduct to give entry to the property over the existing railway crossing. The plant is expected to be in operation by the summer of 1938.

Newsprint Production Heavy

The Great Lakes Paper Company, Ltd., Fort William, Ont., is looking for another record output of newsprint. The mill will soon be producing as much paper as can possibly be manufactured on the two machines. It was anticipated late last year that a large amount of the winter's production of newsprint would be stored for summer delivery, but as yet this has not been the case. The whole output to date has been shipped out by rail as soon as it was ready. New records are expected to be made in the production of paper at the mill during the coming year.

Jack Pine Experiments

There will be a heavy cut of jack pine in Northern Ontario this season and much interest is being taken in the experiments of converting this species into something more than fuel and lumber. It is hoped in time that jack pine may be turned into pulp. In experimenting with this wood, the paper companies are giving thought to the possibility of spruce being exhausted, owing to the reported danger of the saw fly which has wrought heavy destruction to the spruce forests in the eastern part of Canada and to the desirability of using wood that is near home. The availability of jack pine would postpone the day when mills would have to go farther afield for their supplies. Government agencies too have been seeking a wider use for jack pine and between the two it would not be surprising if the wood were found to have considerable more value than heretofore attributed to it. Farmers who sell to the pulp and paper companies would be among the principal beneficiaries.

News of the Industry

Dr. C. D. Howe, Dean of the Faculty of Forestry, University of Toronto, in a report which has just been made public scores severely the cessation of forest research and investigative work in Ontario. He adds that the abandonment of this undertaking means delay in the development of measures eventually to put the forests of the province on a continuous production basis and thus places in jeopardy the future prosperity of the wood using industries. He points out that the attendance of students at the School of Forestry is decreasing by the displacing of trained men in the administration of the fire protection staff and the lack of forest investigation work. The two principal fields of employment now open to the graduates are the pulp and paper industry and the Dominion Forestry Service.

Hinde & Dauch Paper Company of Canada, Ltd., have purchased a parcel of land on Liberty street, Toronto, 210 x 172 feet, with a view of making additions to their plant in the future. The company has had a very satisfactory year and reports that the outlook for 1937 is bright.

E. E. Johnson, president of the Pigeon River Timber Company, Port Arthur, Ont., who conducts large operations in pulpwood in the Thunder Bay district, was recently honored by the members of his staff when a banquet was held in his honor. He was presented with a leather brief case.

Crocker-McElwain Improve Machines

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., January 19, 1937.—Announcement was made last Friday by the Crocker-McElwain Company of the rebuilding of its No. 1 Fourdrinier machine and the renovation of its No. 2 machine. The contract for the rebuilding of the No. 1 machine has been let to the Rice, Barton & Fales Company of Worcester. The improvement to the machine will require new wires, new felts, also an increase in the calender equipment and accessory machinery. The No. 2 machine has been in process of renovation, bringing it up to date, for some time. The width of the sheets 103½ inches will not be changed. For the No. 1 machine the General Electric Company has been given the contract for a 200 hp. motor. As soon as the work is completed on the No. 2 machine the No. 1 will be shut down for its rebuilding. The changes will increase the mill tonnage by a large percentage.

Demand for Paper Continues Lively In Boston

Both Fine and Wrapping Paper Active—Sulphite Bond Quotations Higher —Heavy Buying of Box Board Prevails In Anticipation of Increased Prices —Paper Stock Continues Strong With Supplies Moving In Good Volume.

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., January 18, 1937.—Wholesale paper business continued lively as a whole during the last week in both fine and wrapping lines. Demand for diploma papers was active. Prices of Nos. 1, 2 and 3 sulphite bonds and ledgers, delivered Zone 1, have been advanced. No. 1 sulphite bond has been marked up to 7.65 from 7.50 per hundredweight, and No. 1 sulphite ledger to 8.65 from 8.50, No. 2 sulphite bond to 6.75 from 6.50 and No. 2 sulphite ledger to 7.75 from 7.50, and No. 3 sulphite bond to 6.25 from 6.00 and No. 3 sulphite ledger to 7.25 from 7.00. Prices of all mimeograph paper have been marked up $5.00 per ton.

Rather heavy buying of box board prevailed the early part of last week in anticipation of increased prices which went into effect January 13. The advanced prices are ascribed, at least partly, to the higher values of paper stock. Delivered New England points, filled news board was marked up to 45.00 @ 47.50 from 42.50 @ 45.00; chip board to 42.50 @ 45.00 from 40.00 @ 42.50; single manila lined chip to 52.50 @ 57.50 from 50.00 @ 55.00, and single white patent coated news board (bender) to 65.00 @ 70.00 from 60.00 @ 65.00.

Paper stock continued strong and moved well, with a a number of advances. Under old papers, No. 1 books, heavy, persisted in their upward trend, owing to the shipping situation on the West Coast. The price jumped to 1.00 @ 1.10 from .85 @ .95 f. o. b. Boston. Corrugated boxes rose to .55 @ .60 from .50 @ .60 f. o. b. Boston. Bagging continued steady, with no price changes. Consumers of new domestic rags found it difficult to obtain supplies, which were not received in large amounts from the cutting sources. Prices have consequently risen in a number of cases. New white shirt cuttings No. 1 advanced to .08¼ @ .08½ from .07¾ @ .08¼, new white shirt cuttings No. 2 to .05½ @ .06 from .05 @ .05½, soft unbleached to .08¾ @ .09 from .08½ @ .08¾, and blue overalls to .07 @ .07¼ from .06¾ @ .07, all f. o. b. Boston. Blue overalls are in very keen demand, with a number of mills buying practically all they can secure. Old domestic rags remained firm, with values unaltered. Foreign rags were taken freely, with dark cottons moving up to 2.25 @ 2.50 from 2.00 @ 2.20 and old linsey garments to 2.65 @ 2.85 from 2.50 @ 2.60, both f. o. b. Boston.

Wrapping Paper Merchants Meet

A general discussion of current trade conditions took place at an open luncheon meeting of the Paper Distributors Cost Finding Committee of the Wrapping Paper Division of New England Paper Merchants Association at the Boston Chamber of Commerce Friday, with Chairman Harry J. Dowd presiding. There was a feeling that the present market is affording an opportunity for reasonably profitable transactions. The committee was pleased to have many reports that the wrapping paper trade in this market seems to appreciate the average cost information which the committee has periodically sent out for purposes of comparison with individual operating costs. It was decided to hold an evening meeting at the Chamber of Commerce February 10 and invite the wrapping paper merchants in general. The speaker is to be announced later. On account of the proximity of the annual meeting of the New England Paper Merchants Association on February 3, the customary fortnightly meeting of the Cost Finding Committee will be omitted on January 29.

A survey taken by the New England Paper Merchants Association indicates that the Boston merchants are reflecting in their own prices the advances in the first three grades of sulphite bonds and ledgers.

New Paper Incorporations

The Hampshire Paper Company, Inc., has been incorporated with a capital of 2,000 common shares having no par value. Constant Southworth, 309 Long Hill street, Springfield, is president and treasurer; C. Moffitt Ford, vice-president, and Richard S. Woodbury the third incor porator.

The Lawrence Paint and Paper Company has been incorporated with a capital of $25,000; 250 shares $100 each. Sophia Karp is president; Jos. Dane, 27 Dewey street, Lawrence, treasurer, and Harry Sokol the third incorporator.

The Salem Wall Paper and Paint Company, Inc., has been incorporated with a capital of 200 common shares having no par value. Abraham Pett is president; Minnie Pett, 23 Moffatt road, Salem, treasurer, and Meyer M. Freedman the third incorporator.

News of the Industry

Mrs. Ruby Miers, a valued and efficient private secretary to Catano Fratus, clerk of the corporation of John Carter & Co. Inc., died suddenly Tuesday morning. She had been in the employ of the company for many years.

The New Hampshire Weekly Publishers Association and the Vermont Press Association will hold their annual meeting in Boston January 22 and 23. As has been the custom for many years, the members will be entertained at luncheon on Friday by representatives of Boston supply houses.

Knight, Allen & Clark, Inc., are remodelling their offices and adding an extra room to facilitate the operation of their business.

This very progressive house has also made additions to the sales staff, including Walter F. Temple, who has been in the paper business twenty years, and previous to his new position was the Boston representative of the Paddock Paper Company, Providence, R. I. The firm has made a few other additions to the staff, including Joseph D. Ward.

M. B. Lowe, of the Lowe Paper Company, Ridgefield, N. J., called on the Boston trade last week.

H. M. Russell, of the Russell Box Company, Medford, Mass., left last week on a trip to New York.

The Hub Folding Box Company, 16 Binford street, has leased additional floor space and bought more equipment to take care of increased business.

Soundview to Give Three Shares for One

Soundview Pulp Company directors have declared, subject to approval by stockholders, a dividend of 300 per cent, involving the issuance of three new shares of common for each share now held to stockholders of record February 17.

Philadelphia Paper Trade Association Meets

Report of Retiring President Norbert A. Considine Praises Work of Statistical Department and Educational Program for Paper Salesmen—Ormonde Freile, of Paper Merchants, Inc., Elected President for the Ensuing Year.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., January 18, 1937—The annual meeting of the Paper Trade Association of Philadelphia, which was preceded by a luncheon, was held at 12 o'clock on Wednesday, January 13 in the Down Town Club. The meeting was presided over by retiring president, Norbert A. Considine. In his report, Mr. Considine called attention of the members to the Statistical Department of the association, which has proven so very valuable; he stated that the final figures of paper sales for 1936 would be available in a few days. He also reminded those present of the educational program for paper salesmen, which has been launched, stating that if the present interest is sustained, this will be one of the most beneficial activities of the association. He particularly urged the members to stress organization in view of proposed new legislation, similar to the NRA type.

The new Board of Governors comprised of William A. Hentz, sales manager of Thos. W. Price Paper Company; T. H. B. Smythe, head of J. L. N. Smythe Company; C. A. Wilder, of Wilder Bros.; George K. Hooper, president of The Hooper Paper and Twine Company; Nathaniel Saxe, head of Saxe Paper Company and Norbert A. Considine, president of Paper House of Pennsylvania, met immediately after their appointment and elected the following officers for the ensuing year: President, Ormond Friele, vice-president and manager of sales of Paper Merchants, Inc.; first vice-president, William S. Wilcox, president of Wilcox-Walter-Furlong Company; second vice-president, W. B. Killhour, president of Quaker City Paper Company; third vice-president, Harry Lefkowith, treasurer of S. Walter, Inc.; secretary, George W. Weaver, vice-president and manager of Garrett-Buchanan Company, and treasurer, LeRoy S. Bishop, treasurer of Raymond & McNutt Company.

News of the Industry

At the annual meeting held during the week, of Garrett-Buchanan Company, 12-20 South Sixth street, the following officers were elected: Morgan H. Thomas, president; George W. Weaver, vice-president-manager; J. Elwood Thomas, treasurer; Joseph S. Weaver, vice-president; John Green, vice-president; E. J. Beale, vice-president; J. S. Heverly, vice-president; J. H. Miller, vice-president; C. R. Smith, vice-president; F. H. Seltzer, secretary; H. Van Aken, assistant treasurer-auditor, and J. R. Kohl, credit manager-assistant treasurer.

George W. Weaver, vice-president-manager of Garrett-Buchanan Company, and newly elected secretary of the Paper Trade Association of Philadelphia, in a statement regarding the outlook for 1937, has this to say: "In the closing of 1936 we found that it was quite satisfactory. However, the outlook for 1937, in our opinion, seems to be very much brighter. Our efforts during this New Year, will be concentrated along the lines of our Industrial Department, which cover Ruling, Punching, Perforating, Eyeleting, Stitching, etc. It is really a printer's finishing department. This Department is managed by Edward Buchanan.

In our Industrial Department we have six ruling machines, operated by highly trained men who have made ruling their life's work. A great deal of effort will be put forth in our Specialty Department, which covers drinking cups, school supplies, Cellophane tape, in fact, almost any type of paper one would expect to find converted into a specialty item. From our viewpoint, we find our customers so much more optimistic this year than ever before, and we are looking forward to a very good year."

Raymond Blattenberger, general manager of Edward Stern & Co., will be the speaker at the next lecture of the Salesmen's Study Course on Thursday, January 21 in the Chamber of Commerce Building. His topic will be Specialized Processes and will deal with Aquatone-offset, under the following subjects: a. Processes explained; b. Machines used; c. Types of work produced; d. Papers most adapted, and why; e. What does the paper have to do? Through the courtesy of Edward Stern & Co., the class will be taken on a tour through the Stern plant on Thursday, January 28.

Some thirty-odd employees of the Mazer Paper Company, Providence and Garrett Roads, Upper Darby, went on strike today. They are demanding a wage increase of 15 per cent. Strike leaders said company officials offered them a 5 per cent increase, but they refused. About fifty other employees will meet tonight to decide whether they will join in the walkout, it was said.

Fibre Making Processes Gets Orders

Fibre Making Processes, Inc., Tribune Building, Chicago, Ill., announces that it has received the following orders:

Southern Kraft Corporation, Georgetown, S. C.: barking drums, circulating and indirect heating systems and Rosenblad blowsteam condenser plant.

Brunswick Pulp and Paper Company, Brunswick, Ga.: circulating and indirect heating systems and Rosenblad blowsteam condenser plant with turpentine condenser.

Chesapeake-Camp Corporation, Flanklin, Va.: barking drums.

In addition to the above, the company also announces orders for several circulating systems and Nekoosa chip cutters from representative sulphite mills.

John Cornell Addresses Paper Salesmen

John Cornell, vice-president and advertising manager of *The Paper Mill*, was the guest speaker at the regular weekly meeting and luncheon of the Eastern Division of the Salesmen's Association of the Paper Industry, held in the Florentine Room of the Hotel Lexington, New York, last Monday.

Mr. Cornell gave an interesting and instructive address on "The Business Outlook for 1937," using a black-board to illustrate his points and expressing optimism regarding the future trend of business. At the close of the meeting he was accorded a unanimous vote of thanks.

Shut Down ON SHUT-DOWNS

This is no time to put up with needless shut-downs. . . . Vickery Conditioned press felts run from week to week without a wash-up. They stay clean and open over every inch, every minute they're on the job. That means not only fewer shut-downs but better paper and maximum, uniform water removal at the presses. . . . Under present conditions you can't afford to run without Conditioners. May we submit estimates?

BIRD MACHINE COMPANY · SOUTH WALPOLE, MASSACHUSETTS

VICKERY FELT CONDITIONER

YOU CAN MAKE MORE MONEY WITH NEW BIRD MACHINERY

Preliminary Programs for Paper Week

The following is the preliminary schedule of meetings for the sixtieth convention of the American Paper and Pulp Association to be held at the Waldorf-Astoria Hotel, New York, February 22 to 26 inclusive:

Monday, February 22, 1937

A. M.

9:30 Cardboard Manufacturers Association, Executive Committee
10:00 Technical Association of the Pulp and Paper Industry—General Session
10:00 United States Pulp Producers Association, Executive Committee
10:00 Writing Paper Manufacturers Association, Executive Committee
10:30 Association of Paper Towel Manufacturers
10:30 Cardboard Manufacturers Association, General Meeting (Followed by Group Meetings)
10:30 Sulphite Paper Manufacturers Association, Budget Committee
10:30 Sulphite Paper Manufacturers Association, Nominating Committee

NOON

12:00 Sulphite Paper Manufacturers Association, M. G. Sulphite Group—Luncheon

P. M.

12:30 Paper Makers Advertising Club—Luncheon
1:00 Empire State Forest Products Association, Luncheon
1:00 United States Pulp Producers Association, Executive Committee—Luncheon
2:00 Technical Association of the Pulp and Paper Industry—2 Meetings
2:30 Cover Paper Manufacturers Association, Executive Committee
3:00 Interfold Toilet Tissue Association
3:00 Sulphite Paper Manufacturers Association, Unbleached Group
3:00 United States Pulp Producers Association, General Meeting
5:00 Salesmen's Association of the Paper Industry, Executive Committee
6:00 Sulphite Paper Manufacturers Association, Board of Governors—Dinner Meeting

Tuesday, February 23, 1937

A. M.

9:30 Technical Association of the Pulp and Paper Industry—Three Meetings
10:00 Book Paper Manufacturers Association, Executive Committee
10:00 Bristol Board Manufacturers Group, Executive Committee
10:00 Groundwood Paper Manufacturers Association, Two Committee Meetings
10:00 Kraft Paper Association, Executive Committee
10:00 Roll Toilet Tissue Association
10:00 Salesmen's Association of the Paper Industry, Annual Meeting
10:00 Specialty Paper and Board Affiliates, Executive Committee
10:00 Sulphite Paper Manufacturers Association, Bleached Group
10:00 Writing Paper Manufacturers Association, Annual Meeting

P. M.

12:15 Salesmen's Association of the Paper Industry—Annual Luncheon
12:30 Sulphite Paper Manufacturers Association, Manilas Group—Luncheon Meeting
2:00 Book Paper Manufacturers Association, Executive Committee
2:00 Bristol Board Manufacturers Group, General Meeting
2:00 Groundwood Paper Manufacturers Association, Board of Governors
2:00 Kraft Paper Association, Executive Committee
2:00 Technical Association of the Pulp and Paper Industry—Three Meetings
2:30 Specialty Paper and Board Affiliates, General Meeting
2:30 Wrapping Tissues Association
3:00 Cover Paper Manufacturers Association, Annual Meeting
3:00 Sulphite Paper Manufacturers Association, Annual Association Meeting
7:00 Association of Manufacturers and Converters of Tissue, Board of Governors

Wednesday, February 24, 1937

A. M.

9:30 Technical Association of the Pulp and Paper Industry—Two Meetings
10:00 Association of News Print Manufacturers of the United States
10:00 Book Paper Manufacturers Association, General Meeting
10:00 Glassine and Greaseproof Manufacturers Association, Annual Meeting (Barclay Hotel)
10:00 Groundwood Paper Manufacturers Association, General Meeting
10:00 Kraft Paper Association, Annual Meeting
10:00 Specialty Paper and Board Affiliates, Group Meetings
10:00 Writing Paper Manufacturers Association, Rag Content Paper Group
10:30 Association of Manufacturers and Converters of Tissue, General Meeting (Followed by Board of Governors Meeting)

P. M.

1:00 Groundwood Paper Manufacturers Association, Luncheon
1:00 Technical Association of the Pulp and Paper Industry, Annual Luncheon
2:00 Association of News Print Manufacturers of the United States
2:00 Book Paper Manufacturers Association, General Meeting
2:00 Kraft Paper Association, Annual Meeting
2:00 Specialty Paper and Board Affiliates, Group Meetings
2:30 Groundwood Paper Manufacturers Association, General Meeting
2:30 Writing Paper Manufacturers Association, Sulphite Bond Group

Thursday, February 25, 1937

A. M.

9:30 Technical Association of the Pulp and Paper Industry—Two Meetings

It costs no more to
USE *ALL* YOUR STORAGE SPACE

● **IN ADDITION** to providing the most economical means of handling pulp between bailer, storage and cars, Baker Tilting-Telescoping Fork Trucks enable you to stack up to the roof-trusses of your warehouse. Storage space is doubled or tripled without increase in floor-space.

● **BAKER** is particularly well equipped to give dependable counsel on material-handling problems in the paper industry. Baker engineers have given the subject intensive study and the Baker line includes trucks and tractors covering all applications. For detailed information, write

Baker

BAKER INDUSTRIAL TRUCK DIVISION
of THE BAKER-RAULANG COMPANY
2162 West 25th Street • Cleveland, Ohio

The most economical way to handle material is NOT to HANDle it

10:00 American Paper and Pulp Association, Executive Committee
10:00 Specialty Paper and Board Affiliates, Group Meetings
10:00 Waxing Tissue Association

P. M.

2:00 American Paper and Pulp Association, Board of Governors, Business Meeting
2:00 Semi-Crepe Paper for Napkins Group
2:00 Specialty Paper and Board Affiliates Group Meetings
2:00 Technical Association of the Pulp and Paper Industry—Two meetings
2:30 American Paper and Pulp Association, Board of Governors, Open Meeting

The World Two-Way Trade Fair

The World Two-Way Trade Fair, to be held in New York on May 10 to 22, 1937, is the first foreign trade fair to be held in the United States, and its backing by a strong group of foreign trade manufacturers and business men, headed by Louis K. Comstock, president of the Merchants' Association of New York, insures that substantial participation by American industry as well as foreign exhibitors, will provide a visible and tangible picture of American foreign trade.

The paper industry has a section set apart in this fair particularly devoted to the export of American paper products, in common with some twenty other major sections of American export industry. During 1936 few men realized that the paper exports from this country amounted to about twenty-two and one-half million dollars, the best showing for the industry since 1930. Paper exports cover scores of items, from cash register and adding machine paper, wall paper and blotting paper up to highly developed industrial paper sold abroad in vulcanized sheets and tubes for manufacturing purposes. The largest export item is box board and paper board with sales per year of about two and one-half million dollars; next comes wrapping paper with sales of about two and one-third million, grease proof and water proof papers with exports of about one and one-half million dollars, insulating and building board one and one-quarter million, tissue, crepe and toilet papers, including paper towels and napkins, also one and one-quarter million, and vulcanized and other industrial paper products, one and one-quarter million.

These million dollar sales in the paper industry are worth building up. We sold abroad in 1936 more than seven million pounds of greaseproof and waterproof paper. In these particular fields, American quality is supreme and the trade is steadily expanding in spite of the network of tariffs and trade obstacles abroad.

Out in Kalamazoo where much of the greaseproof and waterproof paper is made for export, workers can go to their own factory cafeteria and eat Norwegian sardines that have been packed in tins lined with parchment transported all the way from Michigan to Norway and served over the counter again to the men who make it. This is one of the frequent cases in which paper plays a triangular part in world trade. Another is the large use made abroad of American "kiss-paper" familiarly so called because used in the United States to wrap molasses kisses. The second largest world candy making industry is in Germany and most of the German candy is wrapped in American paper. Still stranger is the fact that the best spruce for this paper grows in Germany. It is imported to the United States, manufactured into paper and sent back to Germany to wrap German candy. Most of this paper comes from Holyoke, Mass., but the paper wrapping machines which are also exported to Germany to help wrap the German kisses with American paper comes from Indianapolis.

A still further marvel of the world travels of American paper products is due to the preference for American parchment paper by Japanese fish canneries. The best Japanese tunafish is wrapped in American parchment paper because it is the only paper that stands cooking in a high temperature and adds no stain or color to the delicate taste of the fish, so in this respect it is our trade rivals, the wily Japanese, who are our most loyal and best customers.

It will be seen that the words "Two-Way Trade" are used advisedly by the forthcoming New York Fair. Imports and exports will be on display from more than thirty countries in the world, the great predominance, of course, being occupied by American exhibitors. The space devoted to the Fair will be the largest urban indoor exhibition hall in the United States—Commerce Hall of the Port Authority-Commerce Building, containing approximately five acres of space. The Department of State, Commerce, Agriculture, Labor and Post Office will bring to the fair the most varied government exhibit ever shown at an American trade fair, and the National Foreign Trade Council, backed by more than forty industrial and trade associations and Chambers of Commerce is cooperating with the management and direction of this ambitious undertaking.

The fair is a non-profit making enterprise incorporated under the Laws of the State of New York and is expected to be a permanent fixture in the American commercial year. Its dates coincide with Foreign Trade Week observed throughout the country. The board of directors and other officers of the Fair are as follows: Chairman of the Board, John L. Merrill, president, All American Cables, Inc.; President, Louis K. Comstock, president, Merchants' Association of New York; Vice-President, James S. Carson, vice-president, American and Foreign Power Company; vice-president, Frederick W. Nichol, vice-president, International Business Machines Corporation; and the other directors comprise—Paul W. Alexander, president, Wessel, Duval & Co.; E. W. J. Hearty, president E. W. J. Hearty, Inc.; Henry Howard, consulting engineer; Frederic C. Irons of Baker, Irons & Dockstader, Inc.; Robert D. Merrill, All American Cables, Inc.; Robert H. Sexton, managing director, World Two-Way Trade Fair; and James E. Sitterley, publisher of the *Importers Guide*.

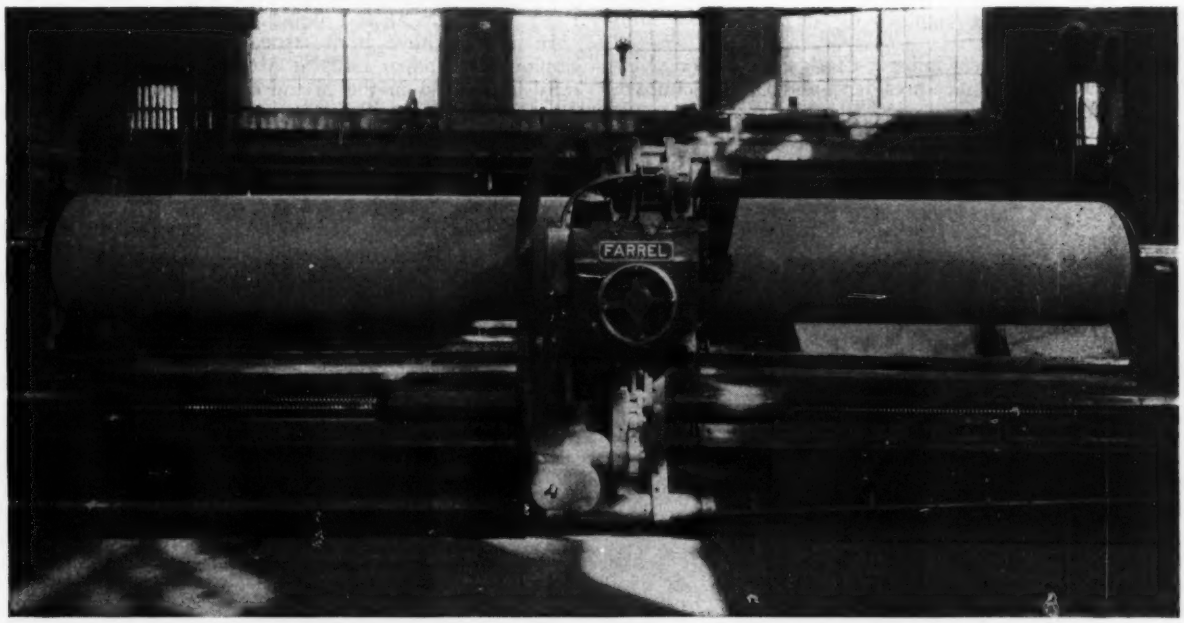
Representative committees are being set up for each important industry and consultations are now being held with the paper industry for that purpose. It will be, of course, a vital principle of the World Two-Way Trade Fair to attract foreign buyers. Toward this end, the State Department has distributed bulletins and information of the fair to all American trade officers abroad, and American Chambers of Commerce in foreign countries are also acting as information and distributing centers.

As President Comstock states in his official announcement of the purposes of the Fair, "We hope to be able to show in one place and in one concentrated fortnight the cream of the products available in the United States for sale abroad. It will facilitate the introduction of new lines and new products. It will provide a new means of promotion for the moderate sized manufacturer.

"We have talked about our foreign trade progress for years without giving the American public an adequate opportunity to see the goods we sell. Let us get out in the open; let us set these products up in the actual scenery in their service abroad, and I believe that not only the American public but the foreign public as well will get an understanding of the importance of our foreign trade they have never possessed before."

MODERN ROLLS *for* MODERN MILLS

MADE IN A MODERN PLANT



A part of the Grinding Room showing a 241-inch Stowe-Woodward Rubber Covered Top Press Roll in a modern precision grinding machine

Modernization begins at home with Stowe-Woodward. It begins with a modern factory designed especially for roll manufacture, modern equipment and modern production methods.

Modern Stowe-Woodward Rubber Covered Rolls made under these conditions are an important part of most of the new and modernized machines. At Savannah, Everett, Houston, Augusta and soon in Lee and Charleston as well as in scores of other mills, Stowe-Woodward Rubber Covered Rolls are helping to maintain volume production at low cost.

STOWE-WOODWARD, INC.
NEWTON UPPER FALLS • MASSACHUSETTS
NEW YORK OFFICE • WOOLWORTH BUILDING

Makers of WHITE STAR *Rubber Covered Rolls,* TANNITE *Couch Rolls* STONITE *Top Press and Smoothing Rolls—All by the* COREWELD *Process*

RECONSTRUCTED WISCONSIN MILL TO RESUME

(Continued from page 17)

Appleton, Wis., was chosen president of the Wisconsin Paper Group at its annual meeting January 9 at the Valley Inn, Neenah, Wis. The session was attended by forty executives representing eighteen of the 29 member mills throughout Wisconsin.

W. K. Austin, of the Kimberly-Clark Corporation, Neenah, Wis., was named vice-president, and L. O. Schubart, of the Neenah Paper Company, Neenah, Wis., treasurer. Others who are to serve with the officers on the executive committee are: N. H. Bergstrom, Bergstrom Paper Company, Neenah, Wis.; L. E. Cory, Menasha Products Company, Menasha, Wis.; T. M. Gilbert, Gilbert Paper Company, Menasha; W. K. Gerbrick, Central Paper Company, Menasha; E. C. Hilfert, Riverside Paper Corporation, Appleton; R. M. Sensenbrenner, George A. Whiting Paper Company, Menasha, and H. D. Wake, Consolidated Water Power and Paper Company, Wisconsin Rapids. M. T. Ray, of the Thilmany Pulp and Paper Company, Kaukauna, who retires as president, automatically continues on the executive committee for one year. He presided at the sessions at which Mr. Schubart presented his report as secretary-treasurer, and Irwin Pearson a report as executive secretary.

Mr. Pearson's report showed that tonnage reported to the group office in 1936 was 33 1-3 per cent greater than in 1935. A total of 2,194 pool cars of paper and paper products was handled during the year, consigned to 215 different destinations. Reports also were submitted by P. J. Reimer, of the Gilbert Paper Company, chairman of the traffic committee, and E. S. Colvin, Appleton Coated Paper Company, chairman of the advertising committee.

Mr. Pearson was retained as executive secretary.

News of the Industry

Northern Paper Mills, Green Bay, Wis., has succeeded in obtaining from the Securities and Exchange Commission at Washington, D. C., an order granting it exemption from the public utility holding company act. Because of its control of the Northern Electric Company and other subsidiaries, the company has been registered as a holding company, but was able to prove that no material part of its income was secured from public utility business. Steps also were taken to merge all subsidiaries with the parent company. The company's report shows that during the first eight months of 1936, combined gross revenues of the Northern Paper and Northern Electric were $2,859,373, of which only $115,600 was realized from the sale of current and rental of transmission facilities to the Wisconsin Michigan Power Company.

Schlafer Hardware Company, Appleton, Wis., which has done an extensive wholesale and mill supply business in the paper industry for more than fifty years, has separated its wholesale and retail divisions. The retail business will be known as Schlafer's, Inc., while the wholesale and supply business hereafter will be called the Schlafer Supply Company, with O. P. Schlafer as president and A. A. Wettengel as secretary. Construction of a new warehouse will be started by the supply company soon, providing 5,000 square feet of floor space.

C. H. Reese has been appointed mill manager of the Nekoosa-Edwards Paper Company to succeed L. E. Smith who resigned recently, according to announcement made recently from the company's main office at Port Edwards, Wis. Mr. Reese joined Nekoosa-Edwards in September, 1935, and has been assistant to Mr. Smith. In his new capacity, he will have charge of all manufacturing operations in the company's two mills. Prior to coming to Nekoosa-Edwards, Mr. Reese had been assistant mill superintendent of the Hammermill Paper Company, Erie, Pa., with whom he was associated for twenty years.

Invitations have been issued to approximately 2,000 employees of paper mills at Menasha, Wis., for a safety rally to be held in the Memorial Building there January 21. The speaker will be C. F. Otto, of Milwaukee, Wis., safety engineer for the Employers Mutuals, and his subject will be "Safety Practices in Industry." Miss Nell Webster, of the Marathon Paper Mills Company, is chairman in charge of a musical program.

Otto Kositzke, 68 years old, who was a foreman of the Fox River Paper Company, Appleton, Wis., for 35 years, died January 9 at his home at Appleton from an illness with pneumonia. He retired last July. Burial took place at Riverside cemetery at Appleton.

Howard Paper Mill Key-Men Are Banqueted

Officials and key-men of the Howard Paper Company organization were guests of Vice President Ward R. Howard at their 17th annual banquet and get-together at the Douglas Hotel in Urbana.

Included among the 80 men present were also officials of the three other plants of the Howard organization; the Aetna and Maxwell paper mills at Dayton and Franklin, Ohio, and the Dayton Envelope Company.

Telegrams from President H. M. Howard, Lucius Howard, former manager of the local plant, and Howell H. Howard commending the local organization for its record of service during the last year and expressing the sincere wish of these officials for a New Year filled with "wealth, health and happiness" for every individual in the organization were read to the assembled foremen and key-men. Messages commending the Howard organization for the high quality of its product and for prompt service on special orders were also read from several customers.

The New Year was greeted as a challenge to the organization to continue its enviable record in the face of rapidly advancing paper-making technique and stiffer competition within the industry.

For the first time in 17 years Attorney H. W. Houston was unable to be present to act as toastmaster, and the post was filled by Judge Marion B. Owen.

Principal address of the evening was delivered by Thurman "Dusty" Miller, Wilmington newspaper publisher and famous humorist.

As usual, Miller kept his audience in an uproar of laughter slipping into each laugh a pill of wisdom. Good sportsmanship as a foundation for personal and industrial success was the theme of his address. Dividing most men into three classes which he defined as " 'I know everything' guys; 'Is that so?' guys, and 'Let's go' guys," Miller declared, "Nobody is going to succeed unless everyone succeeds" and warned against a selfish approach to everyday business and social contacts. He urged a positive rather than a negative approach to daily contacts.

Joseph M. Naughton Joins Eaton Paper Co.

Joseph M. Naughton, Pittsfield, Mass., has recently resigned as comptroller of the Pittsfield-Third National Bank & Trust Company, Pittsfield, to become treasurer of the Eaton Paper Company of the same place.

MAINTENANCE REDUCED

. . with MODERN

Compound Gear Drives . .

COMPOUND gear drives as shown in the above picture are precision made units in every sense of the word. The driving gear consists of a pair of spiral bevel gears delivering power to the machine through a pair of machine-cut spur gears.

All bearings are of the anti-friction type. The entire driving mechanism is totally enclosed and operates in an oil bath.

A positive, forced-feed oil pump driven by the pinion shaft, assures adequate oil supply to all parts requiring lubrication regardless of the speed at which the drive is operating.

Mechanical or magnetic clutches may be used as desired.

The entire drive unit is mounted on a rigid, hollow section base with suitable provisions for accurate setting.

Modern drives are a source of SAVING in maintenance, and in many instances increase machine production by making possible INCREASED speeds.

THE BAGLEY & SEWALL CO. - Watertown, N. Y.

C. P. Robinson Establishes Sales Agency

Clarence P. Robinson has opened headquarters in Room 806, Graybar Building, 420 Lexington avenue, New York City and will transact a general business in woodpulp and paper mill supplies under the name of "C. P. Robinson."

He has covered the pulp consuming field for several years and his business, manufacturing and selling experience bespeak success in his enterprise.

Mr. Robinson recently resigned as sales manager and secretary of the Borregaard Company, Inc., with which

CLARENCE P. ROBINSON

he was connected for over fifteen years, prior to which he was associated for about ten years with the Cherry River Paper Company at its pulp and paper mills in West Virginia and as assistant mill manager.

He is a member of TAPPI. His new telephone number is Mohawk 4-8888.

High Water Handicaps Miami Valley Mills

DAYTON, Ohio, January 18, 1937.—Dayton and Miami Valley towns suffered their highest river stages the past week, probably since the disastrous flood of 1913, when many paper mills were closed because of rampant waters and other troubles developing from the inundation.

At Hamilton the Champion Paper and Fibre Company was compelled to shut down two of its 11 machines because the rise in the Great Miami River at that town. The water was so muddy and riled up that it was impossible to filter it quickly enough to keep all of the machines in the large plant in operation. It was found necessary to shut down two of the machines until such time as the flood waters receded and the usual volume became normal for proper filtration.

Practically every mill center had its troubles on account of the high water. Not only the Great Miami but every stream in the Miami Valley, including the Stillwater, Mad and Little Miami rivers, Wolf Creek, Twin Creek, and scores of other creeks and small streams which soon became raging torrents because of the constant downpour for two days and nights.

Dayton and the Miami Valley were saved from major damage by the detention dams which were constructed after the 1913 disaster, which caused a loss of millions of dollars and claimed nearly 100 lives. These dams, known as the Miami Conservancy project, were completed at a cost of more than $30,000,000, but they have demonstrated their worth on several occasions. They are located north, east and south of this city and control the waters of the principal rivers and creeks.

Owners of property located in the so-called flood district and who were assessed on the tax duplicate for the cost of the improvement, are still paying taxes but no complaint is heard on this score because of the decided advantages accruing from the dam improvements.

J. L. Richey to be Secretary

CINCINNATI, Ohio, January 18, 1937—John L. Richey returned last week from Chicago and announced that he had been elected secretary-treasurer and counsel of the Chicago Paper Association composed of the wrapping paper merchants of the city of Chicago, thirty-one in number. This arrangement went into effect officially on Tuesday night of last week in Chicago at a meeting held there and the administrative machinery has been turned over to Mr. Richey. The idea is to coordinate the operations on coarse paper in that market with the Middle States and Tri States Wrapping Paper Associations and the Central States Paper Trade Association.

Jim Danehy, Mr. Richey's predecessor, who was secretary of the organization for over twenty years, now being relieved of his official duties says that he can enjoy himself better on his trip to Bermuda with that job out of the way.

The meeting was very enthusiastic and it is felt that many constructive things will be accomplished during the year as the members are unanimously pledged to back Mr. Richey in a program for the good of the trade in that market.

National Paper Products Completes Addition

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., January 18, 1937.—The new addition at the National Paper Products Company has been completed and will be placed in use early next month. It is 120 by 220 feet and will be used for converting purposes. Machinery will be moved from the present converting plant as soon as a sufficient surplus of finished products can be produced to accommodate orders during the removal. About 200 employees and guests of the company were entertained at a dance in the new building during the past week. General arrangements for the affair were in charge of Glen F. Loftus, office manager.

Charles Greif Passes On

Charles Greif, former president of the New York Association of Paper and Twine Merchants, died January 15 at Morristown Memorial Hospital at the age of 56.

Mr. Greif had been connected with Henry F. Fulling Company, Inc., paper and twine merchants, of 202 Greene street, New York, for the last thirty-four years and had been its president for many years.

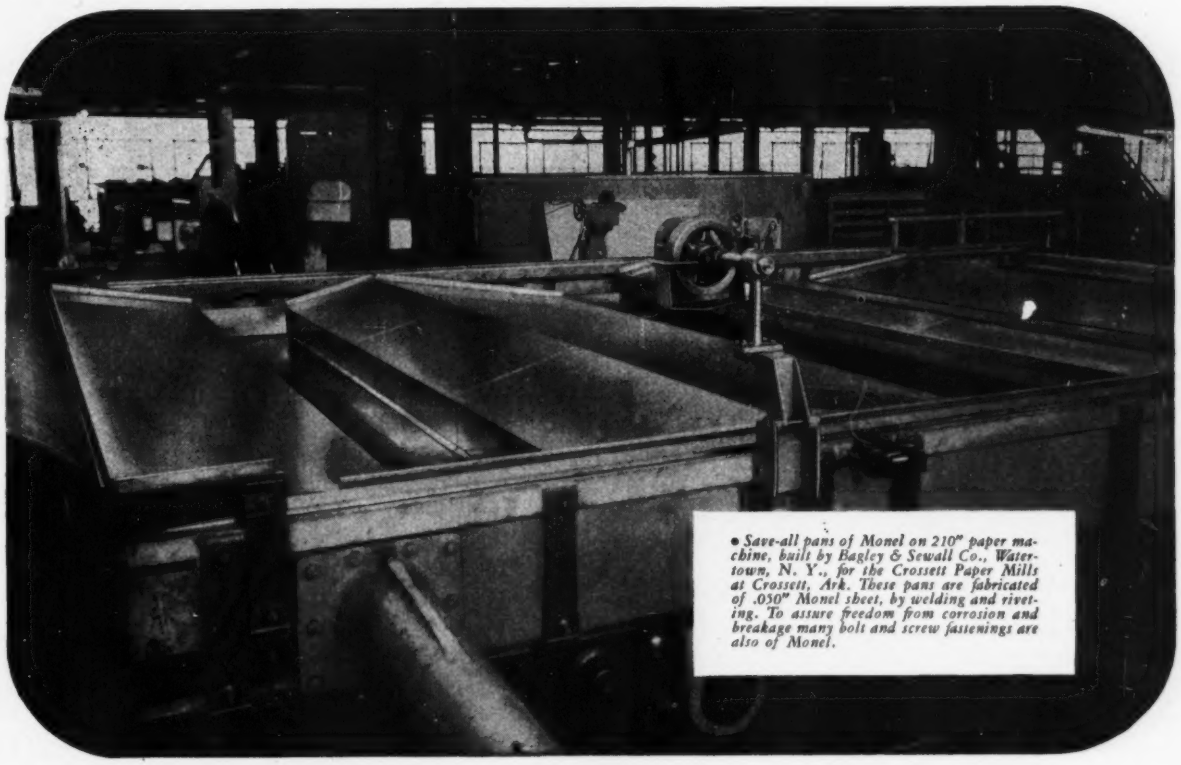
Surviving are his widow, a daughter, Mrs. Robert Pitkin of New York, and a son, Charles Jr.

Otto Brauns Leaves Algonquin Mills

[FROM OUR REGULAR CORRESPONDENT]

OGDENSBURG, N. Y., January 18, 1937.—Otto Brauns, superintendent of the sulphite branch of the Algonquin Paper Mills, expects to leave late this month for Sweden, his native land, where he will take a responsible position in a paper mill. He came here from Sault Ste. Marie.

Monel SAVE-ALL PANS
An Important Feature



• Save-all pans of Monel on 210" paper machine, built by Bagley & Sewall Co., Watertown, N. Y., for the Crossett Paper Mills at Crossett, Ark. These pans are fabricated of .050" Monel sheet, by welding and riveting. To assure freedom from corrosion and breakage many bolt and screw fastenings are also of Monel.

. . . on Bagley & Sewall Company's latest 210 inch Simplex quick wire change fourdrinier machine.

MONEL* save-all pans of proved durability are an important feature on this 210 inch fourdrinier machine for the Crossett Paper Mills. By combining the excellent engineering of their latest type fourdrinier with the advantages of Monel construction, Bagley & Sewall made certain that wire changes and cleaning of the pans are done with small loss in time and labor.

Of course, there are other reasons why Monel pans go into this and many of the other new Kraft and Sulphite mills. Prominent among them:

1. Monel's strength—greater than that of mild steel—assures rigid lightweight construction defying abuse.
2. Monel is fabricated readily. These pans are riveted and welded—no need for any heat treatment—the corrosion resistance of welds and base metal is inherent.
3. Years of paper mill service have proved Monel's definite resistance to the alum content, dilute sulphuric acid or weak hydrochloric acid and alkalies in white water or wire souring solutions.
4. The standard Monel sheet used has a smooth dense surface which needs no polishing to keep filler and stock from sticking tightly.

You, too, can have these repair and labor saving advantages of Monel. Your local fabricator or any of the prominent machine builders can quote you on Monel pans. If you do your own fabricating and need more facts, write us for any or all of the following:

Standard Monel Sheet Schedule
Engineering Properties of Monel
Welding of Monel and Nickel
Monel in Pulp and Paper Mills

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET NEW YORK, N. Y.

MONEL

*Monel is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. This alloy is mined, smelted, refined, rolled and marketed solely by International Nickel.

MONEL

PAPER TRADE JOURNAL

ESTABLISHED 1872

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COMING EVENTS IN THE PAPER INDUSTRY

AMERICAN PAPER AND PULP ASSOCIATION, Sixtieth Annual Convention and meeting, Waldorf-Astoria Hotel, New York, February 22-26.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Convention, Waldorf-Astoria Hotel, New York, February 22-25. Annual Luncheon, Waldorf-Astoria Hotel, Wednesday, February 24.

SALESMEN'S ASSOCIATION OF THE PAPER INDUSTRY, Annual Meeting and Luncheon, Waldorf-Astoria Hotel, New York, Tuesday, February 23.

NEW YORK ASSOCIATION OF DEALERS IN PAPER MILL SUPPLIES, Annual Banquet, Hotel Commodore, New York, February 24.

NATIONAL PAPER TRADE ASSOCIATION OF THE UNITED STATES, Convention, Waldorf-Astoria Hotel, New York, February 22-26.

CANADIAN PULP AND PAPER ASSOCIATION AND SECTIONS, Annual Meeting, Montreal, January 27-29.

TECHNICAL SECTION, CANADIAN PULP AND PAPER ASSOCIATION, Annual Meeting, Montreal, January 27-29.

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION, Technical Association of the Pulp and Paper Industry—Fourth Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, Annual Meeting, Springfield, Mass., June 23-25.

EXPANDING DEMAND FOR PAPER

According to a survey just completed by the Standard Statistics Company, the well known statistical authority, the paper industry as a whole has entered the new year with definitely improved prospects. General industrial activity is expected to reach an even more favorable level than was attained in 1936, and with the resulting further improvement in retail trade, increased magazine and newspaper advertising, and enlarged shipments of a majority of manufactured goods, expanding demand for practically all types of paper and paper products is in prospect.

Supported by this rising demand, prices for many forms of paper will show a general upward trend. Price rises are particularly likely in the book, kraft, and paper board divisions, where prices are adjusted throughout the year. No change in the contract price of $42.50 a ton for newsprint can be made this year, but indications are that spot deliveries, which account for only a small portion of sales, will be made at higher levels. Looking ahead, a higher price for newsprint seems definitely probable for 1938.

Partially offsetting such favorable factors is the prospect for further advances in the operating costs of both paper producers and converters. Several divisions of the industry were forced to increase wages during the latter half of 1936, and further upward adjustments are not unlikely during the current year. Then, too, raw material costs will average at least moderately above the level of a year ago.

However, with demand of sufficient proportions to assure a relatively high operating rate throughout the paper industry, removing the adverse influences of a "buyers' market," it is probable that the major portion of the increase in production costs will be passed along to the consumer. A higher rate of activity, plus the savings afforded by modernization of equipment, will offset the balance of increased costs, and, in some instances, will even result in a moderate widening of profit margins. Accordingly, continued recovery of earning power is to be anticipated for the soundly situated companies in all divisions of the industry.

An expansion of actual operating capacity, either through new construction or the return to operation of previously idle machines, will be witnessed in 1937. This condition is particularly applicable to the kraft division, where close to 750,000 tons of new capacity may be developed before the spring of 1938.

Current plans call for the construction of the bulk of this capacity during the present year, but some units may be delayed, particularly if unsettled labor conditions lead to uncertain sales prospects in large consuming industries. As a result of the increase in price of newsprint to $42.50 a ton as of the first of 1937, a moderate increase in the productive facilities of this division, largely through the placing of idle equipment into operation, is expected.

The increase in the price of newsprint, plus the expanded production should permit of generally higher earnings and the consummation of many financial reorganization plans still pending.

A strong demand for kraft should result in firm prices during the normally less active first half of the year. The effect of increased capacity will not be felt until 1938.

Higher rates of circulation and advertising expenditures for magazines, plus an increase in general printing should result in an improved demand and moderately higher prices for book paper.

The demand for paper board is influenced substantially by consumer activity as well as general industrial conditions. Prospects favor better sales volume and higher prices for paper board.

In general, there should be little labor trouble in the paper industry. The newsprint division, both in the United States and Canada, is largely unionized, and the unions operating in this field are regarded as conservative and well directed. The balance of the industry, with the exception of some paper board plants, is not nationally unionized, although many organizations have company unions. With most manufacturers of paper products other than paper board located away from large cities, it is felt that efforts to unionize the industry will be less intense than in the case of urban plants.

Plans For Paper Trade Convention

It is already apparent that the 34th annual convention of The National Paper Trade Association will be marked by the largest attendance of paper merchants that has ever come together in the history of the trade. It will be held at the Waldorf-Astoria, in New York City, Monday to Thursday, February 22-25, of the week which is now recognized as Paper Week by the entire industry.

Among the most important features of the program will be Survey Committee reports for both Fine and Wrapping Divisions which will reflect not only the revival in volume of business but will include an exhaustive compilation of average operating costs, gross margins and net profits based on the results of 1936 as reported by the members. The number of members contributing to these reports will probably be the largest ever recorded and the value of individual comparison with the composite showing will be correspondingly enlightening. The survey committee is paying special attention to the increase in merchants' cost of doing business due to Social Security and other taxes. Net profits in the trade, as shown by recent surveys, have not been sufficient to meet such additional charges and it is generally recognized that they present a serious problem.

Another program feature of conspicuous interest will be the reports presented and the open forum conducted by the respective Merchandising Committees of the Fine and Wrapping Divisions. The meeting conducted by the Fine Paper Merchandising Committee at the convention in Chicago last fall was declared by many members to be one of the most helpful that they ever attended. J. H. Brewer, Storrs & Bement Company, Boston, is chairman of this committee and promises a program of even greater interest at the February convention. The work of his committee will probably be divided into two special sessions which will be open to Fine Paper members.

An important item of discussion and exposition will probably be State Fair Trade Acts as supported by the recent favorable decision of the Supreme Court. These Acts permit the maintenance by contract of resale prices on manufacturers' trade marked, branded or otherwise identifiable products in intrastate business.

As usual the work and reports of the various commodity committees handling Fine and Wrapping Paper lines will require much attention and will doubtless be conducted with a view to the price trends and conditions of production and distribution to be anticipated during the coming year.

The convention will be presided over by President O. F. Marquardt, New York City, who will also conduct the annual meetings of the executive committee and board of directors. Vice-President F. B. Tracy, Boston, will conduct the meeting of the Wrapping Paper Division, and Vice-President G. G. Cobean, Chicago, the Fine Paper Division. A report for the fiscal year will be presented, and financial matters will be discussed by Treasurer C. W. Vernon, New York City.

Owing to the general reduction in railroad fares which took place last year, special round trip rates under the Certificate Plan are not obtainable as heretofore. In territory covered by the Trans-Continental and Western Passenger Associations, however, and also in Southeastern and Southwestern territory, an excursion ticket may be purchased allowing the rate of 2c per mile in sleeping or parlor cars for that portion of the trip within such territory, plus a charge of 3c per mile for transportation in sleeping or parlor cars in Eastern or Central Passenger territory.

The Waldorf-Astoria reports the heaviest advance bookings in its history.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association:

COMPARATIVE MONTHLY SUMMARIES

Months	1936	1935	1934
January	76.1%	65.8%	.....
February	77.9%	70.0%	.....
March	76.0%	70.5%	.....
April	82.3%	70.0%	.....
May	81.6%	69.4%	.....
June	80.7%	72.3%	.....
July	77.3%	64.9%	.....
August	81.5%	70.9%	.....
September	80.5%	71.9%	58.2%
October	87.6%	75.6%	64.7%
November	88.0%	75.3%	61.7%
December	85.6%	71.2%	59.6%
Year	81.2%	70.5%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS		CORRESPONDING WEEKS	
*December 5, 1936	90.3%	December 7, 1935	76.0%
*December 12, 1936	92.8%	December 14, 1935	76.2%
*December 19, 1936	94.1%	December 21, 1935	79.0%
*December 26, 1936	66.3%	December 28, 1935	53.4%
*January 2, 1937	84.4%	January 4, 1936	72.5%
*January 9, 1937	93.2%	January 11, 1936	75.8%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks					
Ratio Limits	Dec. 5, 1936	Dec. 12, 1936	Dec. 19, 1936	Dec. 26, 1936	Jan. 2, 1937	Jan. 9, 1937
0% to 50%	53	50	44	105	60	32
51% to 100%	275	278	277	217	243	183
Total Mills Reporting	328	328	321	322	303	215

* Subject to revision until all reports are received.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours", were as follows:

Months	1936	1935	1934	Months	1936	1935	1934
January	61%	61%	....	July	69%	59%	....
February	67%	67%	....	August	75%	65%	....
March	68%	67%	....	September	76%	69%	62%
April	70%	61%	....	October	82%	76%	63%
May	68%	61%	....	November	79%	70%	56%
June	68%	65%	....	December	....	60%	52%

Week ending Dec. 5, 1936—78%
Week ending Dec. 12, 1936—81%
Week ending Dec. 19, 1936—82%
Week ending Dec. 26, 1936—63%
Week ending Jan. 2, 1937—62%
Week ending Jan. 9, 1937—77%

New Pulp Concern For Australia

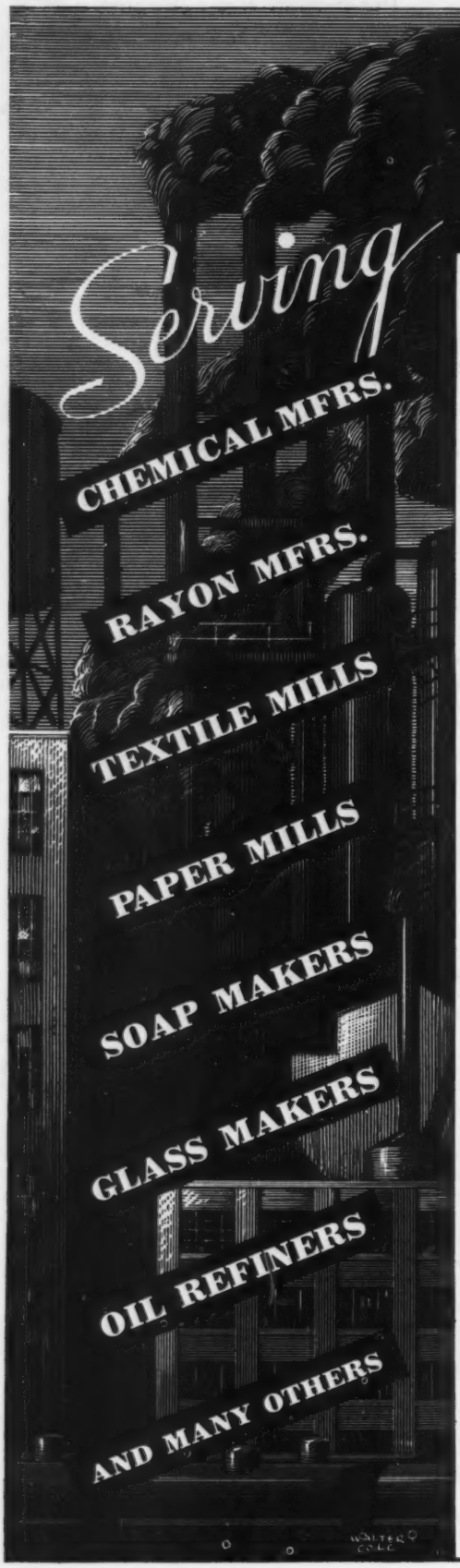
Large-scale production of wood pulp in Australia is planned by local interests providing that Government sanction to the enterprise can be obtained, according to a report from Vice Consul R. H. Hunt, Melbourne, made public by the Commerce Department.

Under the plan, the report states, the Australasian Paper and Pulp Company will form a company with a capitalization of $2,000,000 for the manufacture of paper pulp. The company will require a long-term lease on 100 square miles of territory in the State of Victoria. A one-unit wood-pulping plant is to be installed at a cost of between $1,600,000 and $2,000,000. Production will be approximately 25,000 tons of dry pulp per annum which would require 4,000,000 cubic feet of solid lumber, it was stated.

The royalty proposed for the Government is 60 cents per 100 cubic feet, or $24,000 per annum. Considering the average to be three tons for every 100 cubic feet, the Government would receive 20 cents per ton for wood now wasted or used as firewood, it is pointed out.

The enterprise would provide employment for a thousand persons whose annual wages would be in excess of $1,000,000.

At the present time, the report states, there appears to be no reason why the Government should not sanction the granting of the lease on long terms.



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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

United States Patents on Paper Making

Fourth Quarter, 1936

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Since, as a rule only one claim is published in the Gazette, it is not claimed that the list is complete.

Copies of any of the following patents may be obtained from the Patent Office, Washington, D. C., by sending ten cents ($0.10) for each patent desired. Personal checks and postage stamps are not accepted in payment for patents. Books of coupons containing 20 coupons may be purchased for $2.00 and books containing 100 coupons may be purchased for $10.00.

OCTOBER 6, 1936

R20,123. Process and apparatus for digesting fibrous materials. Thomas L. Dunbar, assignor to Chemipulp Process Inc., Watertown, N. Y. Original number 1,859,384, dated May 24, 1932. Application for reissue May 23, 1934. 50 claims. (Cl. 92-11).

2,056,185. Preparing and utilizing natural fibers. Oscar Casey Greene, assignor to Tropical Products Corporation, New York, N. Y. Filed Oct. 30, 1935. 17 claims. (Cl. 92-10). Treatment with hexametaphosphate.

2,056,209. Paper manufacture. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed Oct. 29, 1932. 22 claims. (Cl. 92-21). In the use of an alkaline filler, a a small amount of emulsified rosin is added to the stock to improve machine operation.

2,056,266. Apparatus and process for waste liquor recovery. Edward G. Goodell, Stevens Point, Wis. Filed June 17, 1933. 20 claims. (Cl. 23-48). Combined smelter and steam generator for black liquor recovery system.

2,056,273. Process and apparatus for manufacturing design roofing. Richard C. Holdsworth, assignor to The Barrett Company, New York, N. Y. Filed Oct. 18, 1933. 8 claims. (Cl. 91-18). Process of applying viscous coating material.

2,056,274. Process and apparatus for making design roofing. Richard A. Holdsworth, assignor to The Barrett Company, New York, N. Y. Filed Oct. 18, 1933. 10 claims. (Cl. 91-16).

2,056,275. Process for manufacturing design roofing and apparatus therefor. Richard A. Holdsworth, assignor to The Barrett Company, New York, N. Y. Filed Oct. 18, 1933. 6 claims. (Cl. 91-16).

2,056,294. Manufacture of chemically modified papers. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Feb. 10, 1933. 6 claims. (Cl. 8-20). Paper containing up to a% of regenerated cellulose is subjected to chemical action to effect an incipient chemical gelatinization of the cellulose to increase its wet strength.

2,056,310. Screen. Frederick E. Palmer, assignor to Sherbrooke Machineries Limited, Sherbrooke, Quebec, Canada. Filed April 26, 1935. 10 claims. (Cl. 92-21). Rotary drum screen equipped with impellers to forcibly direct the diluted stock against the screen.

2,056,336. Envelope making machine. Heinrich Wolff, assignor to Martin Joachimczyk, Berlin-Charlottenburg, Germany. Filed Sept. 29, 1933. 37 claims. (Cl. 93-630).

2,056,380. Core crimping machine. Archibald G. Adams and Joseph Bertain, assignors to International Paper Company, New York, N. Y. Filed Sept. 28, 1934. 7 claims. (Cl. 93-83).

2,056,399. Coating process and coated article. Carroll A. Hochwalt and Herman J. Reboulet, assignors to The Mead Research Engineering Company, Dayton, Ohio. Filed July 16, 1932. 12 claims. (Cl. 91-68). Waste semi-chemical pulp cooking liquor is used as an addition agent in electroplating a metal with zinc.

2,056,427. Stencil. Alberto Mario Gomez, New York, N. Y. Filed Feb. 28, 1933. 2 claims. (Cl. 41-386).

2,056,562. Paper machinery. Adam E. Bridge, assignor to the Black-Clawson Company, Hamilton, Ohio. Filed March 10, 1934. 5 claims. (Cl. 285-93). Condensate removal device for hollow drier roll.

2,056,746. Method for carbonization of all kinds of pulp waste lyes. Ernst Strupp, Munich, Germany. Filed Dec. 19, 1931. 14 claims. (Cl. 202-34). Lye is mixed with a filler, molded and carbonized, the residue being again used as a filler.

2,056,810. Cellulosic material. Frederic H. Smayser, assignor to General Electric Company, Schenectady, N. Y. Filed Sept. 13, 1934. 9 claims. (Cl. 92-38). The pulp is mixed with rosin and molded.

2,056,929. Production of alkaline compounds, sulphuric acid and other valuable compounds. Hugh K. Moore, assignor to Brown Company, Berlin, N. H. Filed May 13, 1933. 31 claims. (Cl. 23-183). Copper sulphide is roasted in the presence of air or water to activate it and thereafter used to causticize a sulphide solution into sulphate.

OCTOBER 13, 1936

2,056,939. Apparatus for treating sheet material. George C. Borden, Jr., assignor to the Riegel Paper Corporation, Riegelsville, N. J. Filed Oct. 20, 1934. 17 claims. (Cl. 91-18). Apparatus for removing crystalline matter from the coating of a sheet.

2,056,958. Floor covering. Edward T. A. Coughlin, assignor to The Barber Asphalt Company, Philadelphia, Pa. Filed March 9, 1935. 7 claims. (Cl. 91-68). Bituminous impregnated base with coating of casein and rubber.

2,056,995. Cellulosic substances and process of manufacture thereof from hemp fibers. Edward Chauncey Worden, I, assignor to Hanson and Orth, New York, N. Y. Filed April 17, 1933. 17 claims. (Cl. 260-100). The cellulose is treated with 0.5 to 19% sodium hydroxide at 19-20 deg. C.

2,057,029. Machine for combining and winding two or more webs of flexible materials. Robert McC. Johnstone, assignor to Cameron Machine Company, Brooklyn, N. Y. Filed May 8, 1935. 2 claims. (Cl. 154-42).

2,057,042. Gummed tape. William W. McLaurin, Old Colony Trust Company, Executor. Filed April 29, 1932. 3 claims. (Cl. 154-43).

2,057,059. Treatment of sulphite process paper machine effluents. John D. Rue, assignor to Hooker Electrochemical Company, New York, N. Y. Filed Nov. 5, 1935. 10 claims. (Cl. 92-1). Method of preparing insoluble aluminum salt, filtering and reuse of white water.

2,057,081. Paper glazing machine. Walter E. Brown, assignor to Wyomissing Glazed Company, West Reading, Pa. Filed Oct. 3, 1934. 8 claims. (Cl. 92-72).

2,057,117. Process of making vanillin. Lloyd T. Sanborn, Jorgen Richter Salvesen and Guy Clemens Howard, assignors to Marathon Paper Mills Company, Rothschild, Wis., and Guy C. Howard Company, Rothschild, Wis. Filed March 28, 1933. 25 claims. (Cl. 260-137). Preparation of vanillin from a concentrated lignin material by heating under pressure with aqueous caustic alkali.

2,057,166. Manufacture of sheeted fiber-binder products. Milton O. Schur, assignor to Brown Company, Berlin, N. H. Filed Feb. 27, 1931. 2 claims. (Cl. 154-2). Dried pulp is fluffed in a hammer mill and blown by means of an air blast against a forming wire. Suitable for impregnation with asphalt, latex, etc.

2,057,167. Manufacture of impregnated sheet products. John C. Sherman, assignor to Brown Company, Berlin, N. H. Filed Jan. 11, 1933. 8 claims. (Cl. 154-2). Composite web of both air-laid and water-laid webs superimposed and impregnated with a binder, such as asphalt.

2,057,295. Bag machine. William H. Engel, assignor to Shellmar Products Company, Chicago, Ill. Filed Oct. 20, 1932. 28 claims. (Cl. 93-19).

2,057,331. Process of producing pulps containing rubber substances. Harry C. Fisher and George Acus, assignors to The Richardson Company, Lockland, Ohio. Filed June 18, 1932. 2 claims. (Cl. 92-21). Rubber latex, ammonia and fibers are mixed, the ammonia evaporated and the pulp mixed with water and beaten.

2,057,548. Method of preventing the adherence of stacked sheets. Roger N. Wallach and Rene Schwartz, assignors to Sylvania Industrial Corporation, Fredericksburg, Va. Filed May 10, 1934. 13 claims. (Cl. 91-68).

OCTOBER 20, 1936

2,057,671. Process of coating. Camille Dreyfus, New York, N. Y. Filed July 31, 1931. 3 claims. (Cl. 91-70.) Use of a partially polymerized vinyl compound.

2,057,731. Sound absorbing material. Treadway B. Monroe and Wallace Waterfall, assignors to The Celotex Corporation, Chicago, Ill. Filed Jan. 3, 1931. 14 claims. (Cl. 154-44).

2,057,960. Fiber treating composition. Leroy A. Kramer, assignor to Victor Chemical Works, Chicago Ill. Filed Nov. 14, 1935. 8 claims. (Cl. 134-15). An emulsion of wax and an aqueous solution of the reaction product of casein and aluminum formate.

2,058,021. Coated wrapping paper. Edouard M. Kratz, assignor to Marbo Products Corporation, Chicago, Ill. Filed March 22, 1934. 3 claims. (Cl. 91-68). The sized material is coated with an aqueous solution of gelatin and sulfonated castor oil.

2,058,085. Sizing paper. Otto Kress and Charles E. Johnson, assignors to The Institute of Paper Chemistry, Appleton, Wis. Filed Jan. 28, 1935. 17 claims. (Cl. 92-21). A wax-protein size.

2,058,157. Gummed paper product. Ferdinand W. Humphner, Oak Park, Ill. Filed May 21, 1934. 3 claims. (Cl. 91-68). A vegetable adhesive overlaid with a water-soluble animal glue.

2,058,182. Machine for forming cylindrical containers. Albert H. Schnidtke, assignor to Seymour and Peck Company, Chicago. Ill. Filed April 11, 1935. 10 claims. (Cl. 93-81).

2,058,333. Apparatus for making corrugated vegetable-fiber board. William H. Mason, assignor to Masonite Corporation, Laurel, Miss. Filed June 30, 1933. 5 claims. (Cl. 154-30). A press for corrugating and drying sheets of boards.

2,058,334. Corrugated vegetable-fiber board and the process of making same. William H. Mason, assignor to Masonite Corporation, Laurel, Miss. Filed June 29, 1934. 7 claims. (Cl. 154-33). Hot pressing corrugations into a wet sheet.

2,058,352. Calender machine. Charles B. Putnam, Earl E. Berry and Lloyd Hornbostel, assignors to Beloit Iron Works, Beloit, Wis. Filed Sept. 2, 1932. 86 claims. (Cl. 92-73).

October 27, 1936

2,058,576. Manufacture of reenforced sheet material. Louis E. Lovett, assignor to Industrial Rayon Corporation, Cleveland, Ohio. Filed Oct. 26, 1933. 5 claims. (Cl. 28-1).

2,058,501. Apparatus for making bags. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed Nov. 20, 1934. 5 claims. (Cl. 93-13).

2,058,503. Colloidal calcium carbonate. Harold Robert Rafton and Arthur Minard Brooks, assignors to Raffold Process Corporation, Andover, Mass. Filed Jan. 4, 1933. 13 claims. (Cl. 23-66). Lime is slaked at a high concentration, employing dilute slurries, and carbonated with relatively concentrated carbon dioxide gas at about 50 deg. C.

2,058,578. Thick butt shingle. Clarence R. Eckert, assignor to The Berrett Company, New York. Filed Dec. 12, 1931. 4 claims. (Cl. 108-7).

2,058,791. Pulp process. Adam Hoche, Brooklyn, N. Y. Filed Nov. 20, 1934. 3 claims. (Cl. 92-9). Use of 1 to 10% sulphuric acid.

2,058,792. Pulp process. Adam Hoche, Brooklyn, N. Y. Filed Nov. 20, 1934. 2 claims. (Cl. 92-9). Use of 1 to 10% sulphuric acid and bleaching with chlorine and sulphur dioxide gas.

2,058,961. Method of making plasticized glassine paper. Lewis Dozier, assignor to Rhinelander Paper Company, Rhinelander, Wis. Filed May 27, 1936. 5 claims. (Cl. 92-40). Plasticizer introduced into partially dried web and then after moistening prior to supercalendering.

2,059,149. Cellulose digester. Friedrich Wilhelm Ludwig Schilde, Graz, Austria. Filed Nov. 4, 1935. 4 claims. (Cl. 92-7). Digester evacuation and circulating system actuated by a steam jet impelling device.

2,059,184. Method of making paperboard. Herman L. Kutter, assignor to The Black-Clawson Company, Hamilton, Ohio. Filed June 16, 1934. 5 claims. (Cl. 92-42). Using stock of 0.07-0.3% consistency and providing a large amount of stock in excess of that required by the mold and recirculating the excess.

November 3, 1936

2,059,200. Bag tube and method of making same. Thomas O. Bancroft, Monroe, La. Filed Oct. 18, 1934. 3 claims. (Cl. 93-35).

2,059,233. Shingle and method of forming the same. Norman P. Harshberger, assignor to Bakelite Building Products Co. Inc., New York, N. Y. Filed April 27, 1929. 25 claims. (Cl. 108-7).

2,059,234. Roofing element and assembly thereof. Norman P. Harshberger, assignor to Bakelite Building Products Co. Inc., New York, N. Y. Filed Jan. 8, 1934. 16 claims. (Cl. 108-7).

2,059,317. Fiberboard cutting tool. Willis G. Davis, assignor to The Stanley Works, New Britain, Conn. Filed Sept. 28, 1934. 6 claims. (Cl. 164-83).

2,059,343. Paper manufacture. Frank Hadfield, assignor to The Mead Corporation, Dayton, Ohio. Filed July 25, 1930. 1 claim. (Cl. 91-68). Paper is coated with a carbonate filler, satin white and starch-casein size.

2,059,403. Automatic paper bottle machine. Henry T. Scott, assignor to American Paper Bottle Company, Toledo, Ohio. Filed April 7, 1932. 27 claims. (Cl. 93-53).

2,059,404. Apparatus for making reenforced binding material. David E. Skedgell, assignor to The Millville Manufacturing Company, Millville, N. J. Filed July 23, 1934. 10 claims. (Cl. 154-1).

2,059,464. Sizing paper. Otto Kress and Charles E. Johnson, assignors to The Institute of Paper Chemistry, Appleton, Wis. Filed March 2, 1935. 11 claims. (Cl. 92-21). A rosin-wax-protein size.

2,059,465. Sizing paper. Otto Kress and Charles E. Johnson, assignors to The Institute of Paper Chemistry, Appleton, Wis. Filed March 28, 1935. 16 claims. (Cl. 92-40). A wax-protein size.

2,059,873. Machine for trimming and splicing the waste ends of paper and similar webs. John A. Jones and Alfred C. Miller, Baltimore, Md. Filed April 8, 1936. 17 claims. (Cl. 164-77). Circular cutters arranged to trim both edges of the splice and means for applying and sealing the adhesive tape to one or both sides of the splice.

2,059,880. Method of sizing photographic paper. Gerould T. Lane, assignor to Eastman Kodak Company, Jersey City, N. J. Filed March 12, 1935. 8 claims. (Cl. 91-68). Paper is treated with high velocity steam to remove air and then plunged into sizing bath.

2,059,881. Apparatus for sizing photographic paper. Gerould T. Lane, assignor to Eastman Kodak Company, Jersey City, N. J. Filed March 12, 1935. 11 claims. (Cl. 91-46). A method of treating paper with steam prior to sizing.

2,059,947. Water-resistant indurated fiber and method of making the same. Duncalf W. Hollingworth, assignor to Continental-Diamond Fibre Company, Newark, Del. Filed Oct. 30, 1933. 30 claims. (Cl. 154-2).

November 10, 1936

2,060,041. Utility and decorative sheet material and method of making the same. Elbert A. Corbin, Jr., Gradyville, and Elwood W. Wolf, Philadelphia, Pa., assignor of one-third to William C. Biddle, Landsdowne, Pa. Filed Oct. 24, 1934. 12 claims. (Cl. 41-33). Sheets of printed tissue over a sheet of "Japanese" tissue and laminating with liquid rubber.

2,060,068. Manufacture of cellulose from lignicellulosic materials. Walter Henry Groombridge and Eric Vernon Mellers, assignors to Celanese Corporation of America, New York, N. Y. Filed July 17, 1935. 12 claims (Cl. 92-11). Lignin is extracted with organic solvents containing sulphur dioxide.

2,060,083. Coated base material. Robert T. Johnston, assignor to Bakelite Corporation, New York, N. Y. Filed Aug. 20, 1931. 21 claims. (Cl. 91-68). A roofing product.

2,060,129. Coating composition and its preparation. Milton O. Schur, assignor to Brown company, Berlin, N. H. Filed Dec. 29, 1934. 7 claims. (Cl. 134-17). Rubber latex coating composition containing glue, glycerin and a water-immiscible rubber solvent.

2,060,253. Leather-like material. Henry Philip Shopneck, Danvers, Mass. Filed Aug. 8, 1934. 9 claims. (Cl. 92-3). A water-laid fibrous base is impregnated with a rubber-containing compound.

2,060,642. Method of forming containers with paper hoops. Swan Smith, assignor to David C. Shepard, St. Paul, Minn. Filed June 3, 1935. 8 claims. (Cl. 93-79).

2,060,685. Pulp separating system. Lloyd T. Murphy, Chattanooga, Tenn. Filed Aug. 31, 1934. 4 claims. (Cl. 92-20). Paper stock separating and cleaning system.

2,060,733. Process of treating cellulose and derivatives thereof. James Karr Hunt and George Henry Latham, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed Sept. 4, 1934. 11 claims. (Cl. 91-68). The fibers and treated with a compound of the general formula $R_3R_3NCO_2R_1$, $R_3R_3NCS_2R_1$ or $R_2R_3NCO SR_1$.

November 17, 1936

2,060,808. Hydraulic inlet for paper making machines. William R. Kellett and Harry M. Ostertag, assignors to Paper Patents Company, Neenah, Wis. Filed Nov. 19, 1934. 22 claims. (Cl. 92-44). The inlet includes a spout having a forwardly and rearwardly adjustable cover plate and a front plate secured to said cover plate.

2,060,821. Manufacture of envelopes, bags, or other containers. Abraham Novick, assignor to F. L. Smithe, F. L. Smithe Machine Co. Inc., New York, N. Y. Filed Oct. 7, 1933. 6 Claims. (Cl. 164-64).

2,060.824. Paper manufacture. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed June 14, 1933. 22 claims. (Cl. 92-40). A fibrous layer containing an alkaline filler and a surface with a non-alkaline filler.

2,060,897. Apparatus for impregnating non-woven fabrics. Edgar C. Richardson and Morgan J. Vittengel, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed Feb. 7, 1933. 1 claim. (Cl. 91-43).

2,060,945. Paper making machine. Edward John Mellentine, Kapuskasing, Quebec, Canada. Filed Dec. 11, 1935. 3 claims. (Cl. 34-48). A pair of rollers form a loop in the lower drying felt; a trough is provided for receiving particles of paper breaking off the web of paper.

2,060,957. Mechanism for measuring color change. Cleo E. Tarvin and William G. Dodge, assignors to News Syndicate Co., Inc., New York, N. Y. Filed Jan. 25, 1934. 2 claims. (Cl. 88-14). Photoelectric means for determining the absorption of a liquid coloring medium by porous material.

2,061,004. Manufacture of envelopes, bags, or other containers. Abraham Novick, assignor to F. L. Smithe Machine Co. Inc., New York, N. Y. Filed Jan. 20, 1933. 9 claims. (Cl. 164-28).

2,061,031. Sterilization of pulp and white water. Clark T. Henderson, assignor to Wallace and Tiernan Company, Inc., Belleville, N. J. Filed Sept. 26, 1933. 3 claims. (Cl. 92-21). Chloramine is introduced into the water used in making the paper stock.

2,061,066. Roll roofing and process of making same. Clarence R. Eckert, assignor to The Barrett Company, New York, N. Y. Filed Dec. 12, 1931. 4 claims. (Cl. 91-68).

2,061,076. Bituminous emulsions. Lester Kirschbraun, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed Feb. 19, 1934. 2 claims. (Cl. 134-1). Method of mixing a relatively stable and an unstable emulsion of bitumen.

2,061,203. Art of laminating, coating and the like. Ericsson H. Merritt, assignor to Laminating Patents Corporation, Seattle, Wash. Filed March 8, 1932. 21 claims. (Cl. 154-2). Uses a synthetic resinous material.

2,061,205. Pulping process. Frederich Olsen, assignor to The Cellulose Research Corporation. Filed Oct. 31, 1931. 8 claims. (Cl. 92-13). Method of impregnating wood with chemicals.

2,061,332. Process for production of calcium hypochlorite bleach liquor suitable for bleaching of paper stock. John D. Rue, assignor to Hooker Electrochemical Company, New York, N. Y. Filed Aug. 27, 1935. 8 claims. (Cl. 23-86). Milk of lime is passed over screens of 100 to 200 wires per inch and the screened product is chlorinated and adjusted to a pH of 8.

2,061,437. Process of making bags. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed Dec. 15, 1932. 2 claims. (Cl. 93-35).

2,061,438. Process of making bags. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed May 20, 1935. 4 claims. (Cl. 93-35).

2,061,454. Joint for wire fabric. Fred Crossman, assignor to The Lindsay Wire Weaving Company, Cleveland, Ohio. Filed Feb. 15, 1934. 2 claims. (Cl. 245-10).

2,061,509. Impregnated articles. William W. De Laney, assignor to Hercules Powder Company, Wilmington, Del. Filed April 2, 1935. 25 claims. (Cl. 91-68). Box toe for shoes comprising an absorptive base impregnated with a chlorine-containing rubber compound and a resin.

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R20,182. Decorative sheet material and process for preparing the same. Ralph G. Jackson, Woodbury, N. J. Original No. 1,998,780, dated April 23, 1935 Application for reissue June 29, 1936. 26 claims. (Cl. 91-67.9).

R20,184. Leatherboard product and method of making the same. Herman William Richter, assignor to Geo. O. Jenkins Co., Bridgewater, Mass. Original No. 1,975,556, dated Oct. 2, 1934. Application for reissue June 24, 1936. 8 claims. (Cl. 8-2).

2,061,570. Impregnated fibrous material. Per K. Frolich and Peter J. Wiezevich, assignors to Standard Oil Development Company, New York, N. Y. Filed July 19, 1933. 19 claims. (Cl. 91-68). Fibrous material impregnated with a high molecular weight polymer of isobutylene.

2,061,616. Production of cellulose. Henry Dreyfus, London, England. Filed July 12, 1935. 9 claims. (Cl. 92-13). Cellulosic materials are treated at about 150 deg. C. with a 6 to 20% caustic alkali solution under pressure higher than the vapor pressure of the solution at the temperature employed.

2,061,632. Safety paper and the like. Samuel Lenher, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed July 22, 1932. 38 claims. (Cl. 91-67.95). The paper contains an aminoarylthiazole derivative.

2,061,662. Pulp refining apparatus. William V. Knoll, assignor to Mid-West-Fulton Machine Company, Dayton, Ohio. Filed March 14, 1935. 3 claims. (Cl. 92-20). Method of circulating pulp in a beater.

2,061,748. Production of coated creped paper. Edward H. Angier, assignor to Edward H. Angier (Angier Laboratories), Framingham, Mass. Filed Jan. 20, 1934. 2 claims. (Cl. 154-33). A rubber-coated creped paper.

2,061,844. Blotting paper stock advertising card and process of forming same. Chauncey Kenneth Miller, Indianapolis, Ind. Filed June 20, 1935. 13 claims. (Cl. 92-68). The compression of a selected portion of the paper and sealing the surface thereof to transform it into a non-blotting character.

2,061,885. Machine for manufacturing window envelopes. Charles J. Wensler, assignor to Baltimore Paper Company, Kansas City, Mo. Filed Aug. 21, 1931. 14 claims. (Cl. 93-61).

2,061,935. Manufacture of cellulose pulp. Pierre Delcroix, assignor to Papeteries Navarre, Lyon, France. Filed Dec. 15, 1932. 5 claims. (Cl. 92-21). A small quantity of melted paraffin is applied to the drying sheet of unbeaten and unrefined fibers as they pass through the pulp machine.

2,061,976. Process and apparatus for the drying of travelling webs. Otto Merckens, Duren, Germany. Filed Jan. 29, 1936. 6 claims. (Cl. 34-48). Method of passing warm air through the web.

2,062,088. Thin veneer and process for making same. John F. Dryer, assignor to The Formica Insulation Company, Cincinnati, Ohio. Filed March 7, 1934. 13 claims. (Cl. 154-2). A sheet is impregnated successively with a urea formaldehyde resin, a phenol formaldehyde resin and a polymerized vinyl chloride.

2,062,112. Method of forming a container and apparatus therefor. Allen B. Wilson, assignor to Acme Steel Company, Chicago, Ill. Filed April 16, 1935. 10 claims. (Cl. 93-55.1).

2,062,127. Strainer for pulp digesters. Herbert W. Guettler and Clarence J. Christiansen, assignors to Fibre Making Processes, Inc., Chicago, Ill. Filed Feb. 12, 1936. 11 claims. (Cl. 92-7).

2,062,149. Composition roofing. Gerald R. Stark and James Avery Main, assignors to The Patent and Licensing Corporation, New York, N. Y. Filed Dec. 5, 1934. 14 claims. (Cl. 108-7).

2,062,238. Paper machinery. Albert H. Standley, assignor to Downington Manufacturing Company, Downington, Pa. Filed Oct. 19, 1934. 5 claims. (Cl. 92-49). Suction roll engaging and exerting suction action on felt during the return inoperative travel of the felt.

2,062,255. Pigment manufacture. Arthur Minard Brooks and Harold Robert Rafton, assignors to Raffold Process Corporation, Andover, Mass. Filed Aug. 12, 1932. 34 claims. (Cl. 134-58).

2,062,265. Method of making sealed bags. Howze Haskell, assignor to James River Paper Products, Inc., Richmond, Va. Filed Sept. 22, 1934. 4 claims. (Cl. 93-35).

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2,062,291. Tube forming machine. Herbert S. Brown, Chicago, Ill. Filed Aug. 31, 1934. 12 claims. (Cl. 93-80).

2,062,303. Tube making machine. John L. Ferguson, assignor to Paul Hawkins, Los Angeles, Calif. Filed Nov. 9, 1934. 11 claims. (Cl. 93-80).

2,062,382. Apparatus for saturating material. John H. Weller, assignor to The Barber Asphalt Company, Philadelphia, Pa. Filed May 18, 1932. 2 claims. (Cl. 91-32).

2,062,442. Method for making paper. John Campbell, assignor to International Paper Company, New York, N. Y. Filed May 7, 1934. 4 claims. (Cl. 92-21). Method of adding alum to a furnish containing acid reactive filler, comprising passing water over an ingot of alum and adding the solution to the furnish before it passes into the jordan.

2,062,445. Apparatus for the manufacture of paper. Edgar Alexander Charlton, assignor to International Paper Company, New York, N. Y. Filed Dec. 17, 1934. 15 claims. (Cl. 92-39). Method of depositing a layer of stock on screen as it passes through vat and of depositing a second layer during the travel of the screen between the breast and couch rolls.

2,062,471. Apparatus for the manufacture of paper. James M. Murray, assignor to International Paper Company, New York, N. Y. Filed Jan. 29, 1935. 4 claims. (Cl. 92-44). Head box and means for conveying stock to forming wire and to prevent surging of stock against flow-evening means.

2,062,563. Process for the manufacture of paper. Albert Edward Harold Fair, St. Catharines, Ontario, Canada. Filed March 7, 1934. 1 claim. (Cl. 92-40). Filler suspension in finely divided state is sprayed against an inclined baffle and then flowed by gravity to the top of the fiber suspension on the wire.

2,062,737. Paper cutting apparatus. Walter S. Aiken, assignor to The Clark-Aiken Company, Lee, Mass. Filed Nov. 27, 1935. 3 claims. (Cl. 164-68).

2,062,773. Wire cloth. Louis Nicholas Weber, assignor to Appleton Wire Works, Inc., Appleton, Wis. Filed Aug. 24, 1934. 9 claims. (Cl. 139-425).

2,062,922. Paper machine control. Guido Wünsch, assignor to Askania-Werke A. G., Berlin, Germany. Filed Feb. 19, 1934. 9 claims. (Cl. 34-48). Method of controlling the drying temperature of a paper machine.

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R20,200. Treatment of digestion liquors. Albert D. Merrill, assignor to Chemipulp Process, Inc., Watertown, N. Y. Original No. 1,945,504, dated January 30, 1934. Application for reissuance Jan. 29, 1935. 35 claims. (Cl. 92-11).

2,063,071. Safety revenue, postage, and like stamp. Arthur A. Wittnebel, assignor to American Bank Note Company, New York, N. Y. Filed Feb. 14, 1935. 11 claims. (Cl. 91-67. 95).

2,063,177. Recovery of organic constituents from black liquor. Ralph H. McKee, New York, N. Y. Filed Aug. 2, 1934. 18 claims. (Cl. 260-119). Method of separating calcium oxalate and/or calcium acetate from black liquor.

2,063,226. Transfer material such as carbon paper. Roger Braunstein, assignor to Societe Anonyme des Anciens Etablissements Braunstein Freres, Paris, France. Filed May 4, 1933. 5 claims. (Cl. 282-28). A stearin producing body is introduced into paper pulp, the pulp converted into paper and then coated with a copying ink.

2,063,268. Roofing unit and method of making the same. John H. Plunkett, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed May 15, 1933. 7 claims. (Cl. 91-68). The edge is coated with a waterproof material including an insolubilized silicate.

2,063,275. Apparatus for measuring the stiffness of flexible materials. Ralph F. Taber, North Tonawanda, N. Y. Filed Aug. 7, 1934. 34 claims. (Cl. 265-17).

2,063,367. Extracting method and apparatus. Joaquin Julio de la Roza, Sr., assignor to de la Roza Corporation, Wilmington, Del. Filed Oct. 24, 1934. 12 claims. (Cl. 92-7). A method of continuously extracting the chemical used for digesting from the digested material.

2,063,392. Package machine. Wes W. McCain, assignor to Shellmar Products Company, Chicago, Ill. Filed Jan. 23, 1933. 11 claims. (Cl. 93-1).

2,063,595. Stock regulator. William P. Feeney, Appleton, Wis. Filed Oct. 10, 1935. 8 claims. (Cl. 92-46).

2,063,649. Manufacture of impregnated fibrous base for shoe stiffener parts or the like. Frank O. Woodruff, assignor to Beckwith Manufacturing Company, Dover, N. H. Filed April 19, 1934. 18 claims. (Cl. 91-70). Use of rosin and polyvinyl ester.

2,063,840. Moisture testing device. Charles O. Fairchild and James P. Henderson, assignors to Charles J. Tagliabue Mfg. Co., Brooklyn, N. Y. Filed Aug. 25, 1933. 23 claims. (Cl. 175-183). Moisture-testing device for loose fibrous or comminuted material.

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2,063,887. Apparatus for treating paper. Russell S. Bracewell, South Hadley, Mass. Filed June 12, 1933. 6 claims. (Cl. 91-44). A device for coating a web of paper.

2,063,888. Method for treating pyroxylin coated paper to eliminate curl. Russell S. Bracewell, South Hadley, Mass. Filed Aug. 27, 1934. 4 claims. (Cl. 91-63). The uncoated side of the paper is moistened, dragged over one or more breaker bars and then dried.

2,063,935. Siding material. Lester Kirschbraun, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed Dec. 16, 1931. 7 claims. (Cl. 20-5). Consists of an embossed sheet of waterproof fibrous material.

2,063,964. Construction material. Charles A. Upson, assignor to The Upson Company, Lockport, N. Y. Filed July 7, 1932. 15 claims. (Cl. 154-44). A closely matted, porous, relatively tough, separately formed fibrous panel for automobile tops.

2,063,999. Gummed tape and method of sealing therewith. Woodford F. Harrison, assignor to The Adhesive Products Company, San Francisco, Calif. Filed July 17, 1935. 7 claims. (Cl. 229-45). Two strips of tape material each having a gummed surface and temporarily bonded together at their ungummed surfaces.

2,064,024. Machine for reclaiming waste fiber. Charles N. McIntyre and Winfield E. McIntyre, Fayetteville, N. Y. Filed Aug. 23, 1935. 3 claims. (Cl. 92-35).

2,064,122. Cushion pad. Herman C. Krannert, assignor to Fruit and Produce Packing, Inc., Indianapolis, Ind. Filed Dec. 29, 1934. 2 claims. (Cl. 154-54).

2,064,130. Process for degumming textile fibers. Luigi Roffeni Tiraferri, Bologna, and Carlo Mazzetti, Rome, Italy. Filed June 23, 1934. 1 claim. (Cl. 92-10).

2,064,132. Building material. Charles A. Upson, assignor to The Upson Company, Lockport, N. Y. Filed Aug. 8, 1930. 6 claims. (Cl. 154-45.9). A composite and waterproof fiber board.

2,064,327. Composite construction material. Charles A. Upon, assignor to The Upson Company, Lockport, N. Y. Filed March 27, 1931. 3 claims. (Cl. 154-44). A layer of felt paper attached to a fiber board and a layer of cotton batting attached to the felt paper.

2,064,360. Manufacture of smooth-faced webs of interfelted fiber. Milton A. Schur, assignor to Brown Company, Berlin, N. H. Filed July 25, 1934. 5 claims. (Cl. 91-68).

2,064,387. Manufacture of casein products. Charles Schwartz, assignor to Hall Laboratories, Inc., Pittsburgh, Pa. Filed Sept. 28, 1934. 9 claims. (Cl. 134-20). A modified casein for coating and sizing compositions.

2,064,473. Composition shingle. Richard A. Holdsworth, assignor to The Barrett Company, New York, N. Y. Filed Feb. 27, 1933. 4 claims. (Cl. 108-7).

2,064,647. Paper manufacture. George S. Carroll, Chicopee, Mass. Filed Jan. 11, 1936. 3 claims. (Cl. 34-24). Method of passing a paper web through the drying cylinders.

2,064,776. Method of and apparatus for maintaining uniformity in paper coatings. Alfred D. Wilkinson and John R. Fanselow, assignors to K. C. M. Company, Dayton, Ohio. Filed July 31, 1933. 6 claims. (Cl. 91-49).

2,064,800. Method of making plasterboard. Hans O. Kauffmann and Dean D. Crandell, assignors to Buffalo-Electro-Chemical Company, Inc., Buffalo, N. Y. Filed Jan. 27, 1933. 28 claims. (Cl. 154-2) Method of incorporating hydrogen peroxide into a sheet with a decomposing agent for the same, whereby oxygen is evolved.

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2,064,866. Lacquering process. Watson H. Woodford, assignor to Remington Arms Company, Inc., Bridgeport, Conn. Filed May 23, 1934. 8 claims. (Cl. 91-68). Method of applying lacquer to paraffin impregnated shot shell.

2,064,883. Mercerizing. Karl Brodersen, assignor to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany. Filed June 30, 1933. 2 claims. (Cl. 8-20). Monochloroxylenol is used in the mercerizing lye.

2,064,901. Digester. James Fletcher, assignor to The Babcock and Wilcox Company, Newark, N. J. Filed May 25, 1935. 20 claims. (Cl. 92-7). Circulating system for a digester.

2,064,929. Method for producing fibrous cellulose from plant stalks and utilization of such fibrous cellulose. George A. Lowry and Jim A. Grant, assignors to Martin Hill Ittner, Jersey City, N. J. Filed June 22, 1934. 24 claims. (Cl. 92-14). Method of preparing flax fiber.

2,064,932. Coating applying machine. Wilbur L. MacKenzie, assignor to United Shoe Machinery Corporation, Paterson, N. J. Filed Nov. 26, 1934.. 6 claims. (Cl. 91-43).

2,065,032. Calendering, drying or like treatment of materials. William Wycliffe, Spooner, Ilkley, England. Filed Sept. 8, 1934. 9 claims. (Cl. 34-48).

2,065,189. Paper finishing machine. Frank C. Ladd, Turners Falls, Mass. Filed Oct. 27, 1934. 3 claims. (Cl. 101-23). A calender hard pressure roll.

2,065,327. Apparatus for making window bags and wrappers. Richard S. Grant and Alfred A. Schlegel, assignors to The Jaite-Grant Display Bag Company, Cleveland, Ohio. Filed Oct. 31, 1935. 5 claims. (Cl. 164-33).

2,065,387. Apparatus for bleaching pulp. Mathew F. McCombs and Francis W. Decker, assignors to Niagara Alkali Company, Niagara Falls, N. Y. Filed Sept. 5, 1935. 3 claims. (Cl. 8-2). Means for introducing chlorine into a pulp suspension.

2,065,395. Fractured wood fiber product. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Aug. 27, 1935. 4 claims. (Cl. 92-3). Substantially individualized fiber fragments (finer than about 10-mesh), practically free from impurities and having a solution viscosity not greater than 2 c. g. s. units.

2,065,396. Chemical pulping process. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed March 30, 1936. 6 claims. (Cl. 92-11). Material is enveloped with an atmosphere of moist sulphur dioxide gas at about 80 deg. C., the enveloping atmosphere is removed and the material cooked with an alkaline liquor.

2,065,439. Construction material. Albert C. Fischer, assignor to The Philip Carey Manufacturing Company, Lockland, Ohio. Filed Nov. 19, 1932. 2 claims. (Cl. 91-68). Material is saturated with a bituminous saturant and coated with a slow-drying, tacky substance.

2,065,441. Method and apparatus for making containers. George F. Ford and Walter F. Pittman, assignors to Fibreboard Products Inc., San Francisco, Calif. Filed Sept. 18, 1935. 21 claims. (Cl. 93-37).

DECEMBER 29, 1936

R20,217. Production of pulp. Thomas Leonidas Dunbar, assignor to Chemipulp Process, Incorporated, Watertown, N. Y. Original No. 1,901,706, dated March 14, 1933. Application for reissue Jan. 29, 1935. 19 claims. (Cl. 92-11).

2,065,503. Roll sheet cutting machine. Charles J. Beck, Philadelphia, Pa. Filed Jan. 2, 1934. 10 claims. (Cl. 271-84). Delivery mechanism for sheets of cellophane and similar highly flexible materials.

2,065,563. Roasting ore. Bernard M. Carter and Henry F. Merriam, assignors to General Chemical Company, New York, N. Y. Filed Jan. 6, 1932. 4 claims. (Cl. 266-17). Apparatus for roasting finely divided sulphide ore.

2,065,576. Steamer and preheater for corrugating machines. Walter C. George, assignor to Robert Gaylord, Incorporated, St. Louis, Mo. Filed Feb. 24, 1936. 11 claims. (Cl. 154-30).

2,065,605. Negotiable instrument safety paper. Opha Moore, Columbus, Ohio. Filed June 10, 1935. 1 claim. (Cl. 283-9). Method of tinting paper with copying ink.

2,065,636. Apparatus for treating or impregnating paper. Allen D. Whipple and Cortland W. Davis, assignors to The Mantle Lamp Company of America, Chicago, Ill. Filed March 4, 1931. 22 claims. (Cl. 91-55). Method of impregnating with polymerizable fluent substance.

2,065,687. Zinc oxide. Franklin B. Gearhart and Frederick A. Steele, assignors to The New Jersey Zinc Company, Palmerton, Pa. Filed June 8, 1932. 6 claims. (Cl. 134-78). Zinc oxide is treated with 0.1 to 1.0 percent of a fatty acid.

2,065,877. Method of manufacturing a cotton fiber-like material from straw. Soai Tanaka, Sakyo-Ku, Kyoto, Japan. Filed Sept. 10, 1935. 1 claim. (Cl. 92-10).

2,065,925. Method of coating and ornamenting paper and the like. Alan M. Overton and Harry C. Fisher, assignors to The Richardson Company, Lockland, Ohio. Filed March 9, 1932. 3 claims. (Cl. 91-70). An emulsion of gummy material and water, containing flocculated and deflocculated particles, is applied to the surface of the paper.

2,066,066. Pigment manufacture. Arthur Minard Brooks and Harold Robert Rafton, assignors to Raffold Process Corporation, Andover, Mass. Filed Aug. 10, 1933. 27 claims. (Cl. 134-58). Manufacture of calcium carbonate containing magnesium.

2,066,074. Manufacture of composite titanium pigments. Lonnie W. Ryan and Winfred Joseph Cauwenberg, assignors to United Color and Pigment Company, Inc., Newark, N. J. Filed April 10, 1935. 19 claims. (Cl. 134-58). A calcium sulphate-titanium dioxide pigment.

2,066,107. Method of and apparatus for working paper stock. Anton J. Haug, Nashua, N. H. Filed May 31, 1932. 9 claims. (Cl. 92-20).

A New Method of Waste-Heat Recovery from Intermittent Sources Such as Gases and Vapors in the Chemical Industry*

By C. Rosenblad

Abstract

The various sources of intermittent waste heat in the chemical industry are briefly mentioned. A system for classifying various sources of heat according to their value from the point of view of recovery is then suggested. This is based on the heat conductivity, expressed in calories transmitted per sq. m. of heating surface per hr., with reference to a given heating purpose. This factor is termed the quality figure, q. *A load factor* x, *giving the ratio of average load to peak load, and another factor* y, *determined by the relation of the time of utilisation to the total working time, are also introduced for variable sources of heat. Allowing for the latter factors, a reduced quality figure* q_r *is obtained,* $= xy \times q$, *which gives the average calorific value in cal. per sq. m. per deg. C. per hr. of the source of heat in question. This reduced quality figure is a direct guide for estimating the heating surface required, but does not give a complete picture of the value of the source of heat from the point of view of recovery. Certain general considerations are described which must also be taken into account in the classification. Examples are then given of how this method of classification is applied to intermittent sources of heat, from which conclusions are drawn as to the conditions under which a change-over to the storage heat-recovery system is justified. A* sine qua non *of this system, however, is a highly effective liquor to liquor heat exchanger. The technical properties essential to this are discussed, and it is shown how these have led up to the design of an effective spiral heat exchanger. An account is given of how the application of the storage system in the manufacture of pulp has resulted, not only in a saving in heating surface, but also in certain technical operating advantages. The use of the system for recovering heat from flue gases in general is indicated, as well as the possibility of recovering valuable components from the flue gases.*

Heat plays a great part in the chemical industry, as most chemical processes are accompanied either by the absorption or the emission of heat, or both. All, or the greater part, of the heat supplied to or released from a chemical process is present in the form of waste heat. The quality and continuity of this waste heat will determine if, and how far, it can again be used in the process or for other purposes.

The method to be described deals with the recovery of intermittent waste heat contained in steam, vapors and gases. The largest producers of such waste heat in the chemical industry are probably the cooking processes. Thus, in the pulp industry, the heat released when blowing down a sulphite digester may amount to upwards of 700,000 calories per min. In kraft mills, which in general have digesters of smaller size that take longer to empty, the peak load is usually lower: at Swedish mills, from 75,000 to 100,000 cal. per. min., independent of the size of the digesters. The prevailing tendency in the chemical pulp industry is to increase the size of the digesters and reduce the time for blowing down and emptying. In its present form, the apparatus for the recovery of such waste heat sets a limit, however, to this development.

The cooking process is also used in the textile industry, where similar heat recovery problems are encountered when drawing lye from the cookers.

These instances of intermittent waste heat are typical, and represent problems of heat recovery which are common in the chemical industry.

Classification of Waste Heat

The abundant resources of waste heat in the chemical industry make it desirable to fix certain general rules according to which the different kinds of waste heat can be classified and made directly comparable for recovery purposes. The classification ought to be made according to principles which not only take into consideration the amount and temperature of the heat, but also pay due regard to the transmission properties of the heat-conducting medium. These properties are at least equal in importance to the amount and degree of heat. Saturated steam at 100 deg. C. is thus of considerably higher value than flue gases at 500 deg. C. if it is a question, say, of using one or the other for heating water from 10 to 90 deg. C. Here a heat-transmission factor of about 2,500 can be obtained with steam, whereas with flue gases the heat-transmission factor may be something like 25 cal. per sq. m. per. deg. C. per. hr. The greater difference of temperature of the flue gases does not compensate for the superior heat-transmission properties of the steam.

Another example of the dominating influence of the capacity for heat transmission over the temperature is afforded by the conversion of superheated steam into saturated steam by injecting cold water. The temperature loss on saturation is more than made up by the increase of the heat-transmission factor. Certain processes thus tend to improve the quality of the heat, even though it be effected at the cost of lowering the temperature. The primary requisite for determining the technical advantage of such a process, however, is that certain rules be adopted for classifying the quality of the waste heat.

Classification of Waste Heat in Respect of Quality

The determination of quality should refer to a definite use for heating, such as those commonly occurring in practice, *viz.*, heating of water, preheating of liquids and gases, &c., where temperature limits and the amount of heat required are known. The sources of heat to be used are in the first place determined by the Δ_t of the mean temperature difference and the attainable heat-transmission factor k. The designation *quality figure* may suitably be

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adopted for the product of these two factors, $k \times \Delta_t$, denoted by g, which refers to a definite heating purpose within certain limits of temperature; thus

$$q = k \times \Delta_t \text{ Cal. per sq. m. per hr.} \qquad (1)$$

Up to a certain point, an advance determination of figures for the quality of different sources of waste heat in a manufacturing process must be rather arbitrary, because the heat transmission factor k is greatly influenced by the choice of apparatus, permissible resistance to flow and temperature ranges. To enable a comparison to be made between the usual sources of waste heat, however, the k values which correspond to normal rate of flow and resistance in the apparatus may be fixed by proceeding from the corresponding normal heat transmission factors—a—for the different media. The respective order of magnitude of these heat-transmission factors may be given as follows—

1. *Saturated Steam*—a = 10,000 cal. per sq. m. per deg. C. per hr.

10,000 presupposes pure steam, such as draw-off steam from a power plant or self-evaporated steam from pure condensation.

Steam released from chemical processes is in general fouled by gases which reduce the heat-transmission factor. Such gas-mixed steam is classified in the following groups, *viz.*:—

2. *Saturated steam mixed with gases*—a = 10,000 to 40.

The heat-transmission factor is reduced with increased content of uncondensable gas in the steam. Proceeding from pure steam, the upper limit is fixed at 10,000, *i. e.*, steam containing no trace of uncondensable gas. The lower limit, 40, refers to 100 per cent of dry gases, described in the next group.

Between these extremes a is determined by the partial pressure of the steam at a given rate of flow, temperature, total pressure and sectional area of the gas.

From investigations carried out on a mixture of steam and sulphur dioxide with a certain apparatus, a has been found within a restricted temperature range to be directly proportional to the partial pressure of the steam and to the gas flow raised to the ⅔ power. The simple ratio between heat-transmission factor and partial pressure found by the author must naturally be accepted with reserve when applied to other steam mixed with gases, but may yet serve as a guide for determining the order of magnitude.

3. *Dry gases*—a = 40.

The figure 40 has been chosen as it is a value easily attained with air, flue gases and gases comparable with these, whether dry or moist. In the latter instance it is assumed that the lowest temperature of the gases is above the condensing temperature, otherwise they will fall under heading (2).

4. *Water and fluids of heating value equal to water*—a =7,000 cal. per sq. m. per deg. C. per hr.

This applies to pure and fouled water and strongly diluted solutions. For liquids of greatly varying viscosity and heat conductivity, the computation is made according to known formulae.

a=7,000 may seem to be a high figure, but it is attained without difficulty in the latest rapid-flow apparatus.

It is not within the province of this paper to discuss the accurate determination of heat-transmission factors when applied to the composition of the medium, rate of flow, temperature, viscosity, heat conductivity and hydraulic radius. For these questions reference is made to recent literature. It is quite feasible, however, simply on the basis of the foregoing values, to obtain good guidance for determining the suitability and use of different sources of heat for a definite heating purpose.

From the a values the heat transmission figures k is obtained, with the aid of the equation:—

$$k = \frac{1}{\frac{1}{a_1} + \frac{1}{a_2} + \frac{\delta}{\lambda}} \qquad (2)$$

The corresponding quality figure will thus be:—

$$q = \frac{\Delta_t}{\frac{1}{a_1} + \frac{1}{a_2} + \frac{\delta}{\lambda}} \qquad (3)$$

in which a_1 and a_2 represent heat-transmission factors in cal. per sq. m. per deg. C. per hour in the heat-absorbing and heat-emitting medium respectively, δ the thickness of wall in meters, and λ the heat conductivity of the wall material in cal. per sq. m. per deg. C. per hr. In conformity with this calculation the quality figures for heat transmission to the heat-absorbing medium with the coefficient a from different heat-emitting media will be the following:—

1. Saturated steam:—

$$q = \frac{\Delta_t}{\frac{1}{a_1} + \frac{1}{10{,}000} + \frac{\delta}{\lambda}} \text{ cal. per sq. m. per hr.}$$

2. Saturated gas-mixed steam:—

$$q_{max.} = \frac{\Delta_t}{\frac{1}{a_1} + \frac{1}{10{,}000} + \frac{\delta}{\lambda}} \text{ cal. per sq. m. per hr.}$$

$$q_{min.} = \frac{\Delta_t}{\frac{1}{a_1} + \frac{1}{40} + \frac{\delta}{\lambda}} \text{ cal. per sq. m. per hr.}$$

3 Dry gases:—

$$q = \frac{\Delta_t}{\frac{1}{a_1} + \frac{1}{40} + \frac{\delta}{\lambda}} \text{ cal. per sq. m. per hr.}$$

4. Water

$$q = \frac{\Delta_t}{\frac{1}{a_1} + \frac{1}{7{,}000} + \frac{\delta}{\lambda}} \text{ cal. per sq. m. per hr.}$$

in which Δ_t represents the actual mean temperature difference, integrated over the whole temperature range. As will be demonstrated below, the above simple expression of quality furnishes a good guide for the classification of heat sources from the standpoint of capacity for heat transmission.

Classification in Respect of Quantity

The waste heat in a manufacturing process frequently occurs intermittently, and in consequence the required heating surface for a given quality figure and total amount of heat per unit of production will have to be made larger the more pronounced the discontinuity.

Proceeding from the assumption that the required heating surface is determined by the peak load, the ratio average load to peak load becomes a factor less than 1, which may be denominated x. As the waste heat, moreover, often occurs with intermissions of some length, during which the equipment cannot be utilised, still another factor y may be introduced, determined by the ratio utilisation time to total working time. The product of the two factors

$x \times y$ may be denominated the utilisation factor. This factor will be decisive for the valuation of heat sources in respect of quantity. The higher the utilisation factor the more valuable will be the source of heat in question. If a source of heat gives a poor utilisation factor, however, it may be improved by cutting off the load peaks and reckoning solely with the basic load. By limiting a source of heat sufficiently, one can in this way increase its value, so that its use will equal that of other apparently more efficient sources of heat. With waste heat occurring intermittently, the utilisation factor will thus become a function of that portion of the waste heat which is to be recovered, a circumstance that must always be considered when determining the value of such waste heat.

Classification from Various General Points of View

The investment and yield of money for a heat-recovery plant, computed on recovered ton-calories, are not solely determined by the above quality figures and utilisation factor. In practice a correction must often be introduced for the deposits on the heating surfaces. Consideration must further be paid to the amount of power required, space requirements for the utilisation of a certain source of heat, as well as the demands on the plant. Under certain conditions the utilisation of a given source of heat may indeed be impossible owing to the prohibitive cost of the material required for apparatus and fittings.

The general considerations which must be applied in addition to the above in a systematic classification of different sources of heat in a process of manufacture can only be based on experience of the actual conditions. It is obvious that these are at least of importance equal to that of the theoretical principles. Nevertheless, it can be maintained that a classification on the basis of $q \times xy$ is of fundamental importance for judging the value of a source of heat of this description. The product of this equation, which may be called the reduced quality figure, denoted by q_r, is an expression of the average yield of heat per sq. m. of heating surface for all kinds of heat sources.

Thus

$$q_r = q \times xy. \qquad (4)$$

Application of the Foregoing Method of Classification to Intermittent Sources of Waste Heat

In the introduction it is stated that intermittent waste heat is present in large amounts in chemical works, especially in cooking processes. In certain instances, *e. g.*, as the blowing down of sulphite digesters, the peak loads are so high, and occur so far apart, that it has not so far been deemed profitable to recover such waste heat. The most up-to-date kraft mills are for that matter not far behind in the matter of peak loads at blowing down. The author has thus designed a heat-recovery plant which handles 1,000 kg. of steam per min. at a Finnish kraft mill.

In the usual systems the steam released from such processes passes direct into surface condensers. The cost of these devices, however, is rather high, because the high peak loads and impurities in the steam necessitate a large over-proportioning of the heating surfaces. This is illustrated by the following example.

It is assumed that a kraft mill has a capacity of 240 tons of 90 per cent pulp in 24 hours, with the production distributed in six digesters of 160 cu. m. The number of charges during that time is 18, and the blowing time 25 min. per charge. The amount of steam released may be taken to be 16,000 kg. per blow, and the peak load to be 1,000 kg. of steam per min. All this steam is to be used to heat water to 70 deg. C. from an initial average temperature of 10 deg. C.

If a on the steam side is assumed to be unable, on account of the steam being fouled by gases, to reach a higher mean value than 7,000 cal. per sq. m. per deg. C. per hr., the quality figure for rapid circulation on the water side will become

$$q = \frac{\Delta t}{\frac{1}{7{,}000} + \frac{1}{7{,}000} + \frac{\delta}{\lambda}} \text{ cal. per sq. m. per deg. C. per hr.}$$

If the steam is assumed merely to condense, Δt may be estimated with sufficient accuracy to be 100 — 40 = 60 deg. C., and thus q = 210,000 cal. per sq. m. per deg. C. per hr.; this on the understanding that, for the present δ/λ is neglected.

For the computation of the utilisation factor, we have

$$x = \frac{16{,}000}{25 \times 1{,}000} = 0.64, \text{ and } y = \frac{18 \times 25}{24 \times 60} = 0.33,$$

which gives a product xy=0·20. The heating surface can thus only utilise a reduced quality figure, q_r=0·20 × 210,000=42,000 cal. per sq. m. per hr.

This low utilisation factor, which may be observed at most blow-downs in cooking processes, led to an investigation of the possibilities of storing the heat of the steam in the form of liquid heat. At first sight it may seem paradoxical to transfer steam at 100 deg. C., giving off its heat at a constant temperature, into liquid "heat" at 95 deg. C., giving off its heat at a falling temperature, in order to gain a reduction of heating surface. Nevertheless, it can be shown that, in spite of the smaller difference in temperature between the heating medium and the one to be heated, a notable saving of heating surface can be obtained.

Returning to the above assumption and allowing the steam released at the blows first to be converted in a jet condenser into hot water at 95 deg. C., it will be possible to store this water in an open tank, from which it can be continuously withdrawn. In this way the utilisation factor is raised from 0.20 to 1.00. If it is further assumed that the water at 95 deg. C. can be used in a rapid-flow preheater down to 45 deg. C. simultaneously with continued heating of the clean water from 10 to 70 deg. C., the Δt of the mean temperature difference will be 30 deg. C. and the corresponding comparable quality figure as follows:—

$$q = \frac{30}{\frac{1}{7{,}000} + \frac{1}{7{,}000} + \frac{\delta}{\lambda}} = 105{,}000 \text{ cal. per sq. m. per hr.}$$

If the resistance to heat-transfer of the wall, which for the present purpose may be considered of the same effect, be neglected, the quality figure thus becomes 2½ times as large. In other words, a change-over to storage of the steam heat in liquid form would reduce the required heating surface by 60 per cent.

A storage method of this simple description is, however, technically too uneconomical. In the example, fresh water in the jet condenser is first heated from 10 to 95 deg. C. by the steam supplied, and then cooled in the rapid-flow preheater from 95 degrees only to 45 deg. C. In other words, about 41 per cent of the heat supplied is lost again in the drain water. It is true that cooling can be carried further than to 45 deg. C., but the quality figure will be simultaneously reduced.

In order to prevent this loss of heat, a heat-recovery system has been designed in which the cooled water condensation can be used over again as a cooling liquid. In the jet condenser described above, condensation water

cooled down to 45 deg. C. is heated to 95 deg. C., and in the rapid-flow preheater the same amount of heat is given off to fresh water in addition to the under-cooling heat of the condensed steam from 100 to 45 deg. C. Cold water from an outside source is thus never supplied to the condensing section of the equipment. Not only can the improvement of the quality figure in this way be fully utilised, but heat is at the same time recovered from the condensation of the blow-down steam: in the present example down to 45 deg. C. instead of the condensate having been assumed to escape at 100 deg. C. in the surface condenser installation. Assuming the heat-content of the blow-down steam to be 640 cal. per kg. there will thus be an extra gain in the storage system of about 7 per cent. At a lower load a certain under-cooling of the condensate will be obtained, however, in the surface condensing equipment when the peak load is passed, resulting in a corresponding reduction of the heat gained by the storage system.

In practice, a comparison between the two systems for recovery of heat when blowing down pulp digesters will show an even more favorable result for the storage system in the requirement for heating surface. The thermal conductivity of the heat transmission surface, represented by δ/λ in the expression q_r, has not yet been considered. If this term were introduced, a much greater reduction of the quality figure q_r would be found for surface condenser plants than for a storage installation, due to the more rapid formation of deposit and rust on the walls of the former. This circumstance will be discussed in describing the use of the storage system in the chemical pulp industry.

The storage system comprises certain other parts, in the first place a liquid-heat accumulator. This accumulator, however, relieves the hot-water tank, which can be made smaller to a corresponding extent, being fed continuously with hot water from the accumulator. The jet condenser which is also required for the storage system is inexpensive in relation to its capacity: the additional cost it represents is insignificant in comparison with the saving in heating surface that can be made, and the saving under the latter head is all the more conspicuous when some corrosion-proof material has to be used owing to the composition of the water or liquid. Apart from the saving that can be made in heating surface, which in general necessitates the largest costs for maintenance and operation, the first cost for installing a storage system when the utilisation is low, as in the above example, will be much lower than for a surface condenser plant, in spite of the cost of jet condenser, accumulator and circulating pump.

When intermittent sources of heat, of whatever kind, are being investigated, the quality figures for the recovery can be determined in the manner described above, both for direct transmission into a heat-transmission plant and indirectly by way of a storage system. Even though the initial cost of storage may be higher with a storage system, the practical benefits obtainable will often more than compensate the extra cost of installation.

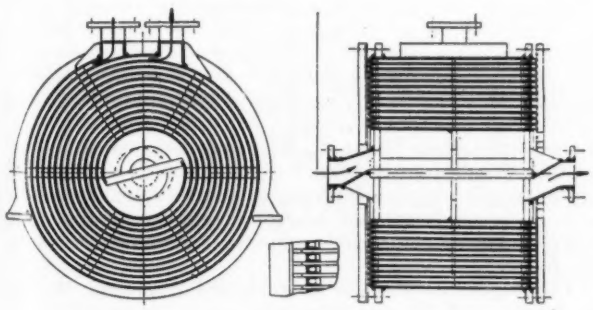

FIG. 1.

A *Sine Qua Non* for the General Use of a Storage System is a Highly Effective Liquor to Liquor Heat-Exchanger

The simplest, though not the best, way of heating a liquid indirectly is to introduce a steam-heated coil into the vessel containing the liquid. A better way is to circulate the liquid through a separate heat exchanger by means of a pump. A higher velocity of the liquid can then be obtained, which promotes heat transmission.

In experiments with water, Sonnecken found the heat transmission proportionate to $w^{0.9}$ with water flowing through brass pipes (smooth surface), and $w^{0.7}$ through steel pipes (rough surface). Stender gives $w^{0.87}$.

If a high heat-transmission factor is required, the flow velocity (w) should thus be as high as possible. High flow velocities reduce the probability of deposits being formed on the heating surface, and will thus also indirectly increase the heat transmission.

It must be noted that, at a given velocity, there will be considerably more friction in a small than in a larger pipe. The heat-transmission factor will also be higher in the smaller pipe, as the walls will be thinner and the distance which the heat has to be transmitted through the liquid therefore shorter. The pipes through which the liquid is to flow should therefore be made as small as may be permitted by practical considerations.

When the heat-supplying medium is a liquid, it will be much more difficult to obtain high flow velocities than when steam is used. The temperature of the heat-supplying liquid will, unlike that of steam, be reduced considerably in the cooling process. Nevertheless, in order to obtain the highest possible temperature difference, neither the heat-receiving nor the heat-supplying liquid should be circulated in the apparatus. The liquid should only pass *once* through the heat exchanger, and must then be heated or cooled, as the case may be, to the final temperature desired. The quantity passing through the heat exchanger will, therefore, be extremely small in relation to the size of the latter. This makes it very difficult to design a tubular cooler in which the velocities will be high on both sides of the pipes.

If the heating surface is built up in the usual way of tubes fixed between headers, these must be divided by screens into a number of groups coupled in series, which will repeatedly change the direction of the flow. Alternatively, a large number of small apparatuses can be coupled in series. Either method involves complications and increased cost, while the repeated turns, and the introduction of frictional surfaces which take no part in heat transmission, will increase the resistance to the flow.

After extensive experiments carried out with a view to obtain, without the above drawbacks, an effective heat exchanger for the storage system, the problem was solved by substituting sheet metal for tubes in the construction of the heating surface. The considerable length of the two conduits necessitated by the small temperature differences is very simply obtained by winding two long metal strips into spirals. Between these strips two canals are formed —one for the heating and the other for the heat-absorbing liquid (Fig. 1). The absence of abrupt turns and ineffective frictional surfaces permits comparatively high flow velocities. The sides of the two canals are closed by packings, which can be removed when the two side-plates are lifted. The heating surface can then be cleaned on both sides, and, as it is not very wide, it will be possible in

practice to use very shallow, but nevertheless easily cleaned, canals.

This division of the liquids into thin, easily heated or cooled layers, coupled with the considerable length of the canals, makes it possible to utilise very small temperature differences. By these means a heat exchanger fully up to the standards required for use in the storage system has been designed.

The special properties of this heat-exchanger, which was originally designed for use in the storage system, have led to its use for other purposes, especially for utilising the heat of liquids in the chemical industries.

The heat-transmission factor from liquid to liquid in this apparatus varies between 1,600 and 3,200 cal. per sq. m. per deg. C. per hr., which corresponds to *a* values of from 5,000 up to 12,000, according to the velocities, temperatures, and permissable resistances to flow selected.

Although the design was originally intended for the transmission of heat from one liquid to another, it is also used for the heating of liquids by steam.

Some Examples of the Use of the Storage System

Sulphate Pulp Mills

Large amounts of vapor are drawn off relatively quickly from the digesters in a sulphate mill at intervals, both during the first heating of the charge (turpentine gases) and when digestion is complete and the pressure in the digesters is reduced to a suitable level preparatory to the final blowing out, in which process the largest quantities of vapor are released.

This vapor is utilised to heat the large quantities of water needed at sulphate mills for washing pulp and sludge. When the vapors exhausted from the digesters are mixed with black liquor and evil-smelling gases, they cannot well be used for direct heating of the water, which is then usually heated indirectly in surface condensers.

It has been pointed out above that usually a saving in heating surface can be effected by replacing the surface condensers for blow-off vapors by jet condensers, liquid accumulators, circulating systems, or liquor to liquor heat exchangers. This will effect an increase in the reduced quality figure of the heat source, which will be more pronounced the greater the peak loads.

The data given above have been obtained from a modern sulphate mill using large digesters and brief blowing-off intervals. Here, the utilisation factor was as low as 0·20 in a surface condenser plant boiling 18 charges per diem, and with 25-min. blowing-off intervals. It is thus obvious that a change-over to the storage system would pay.

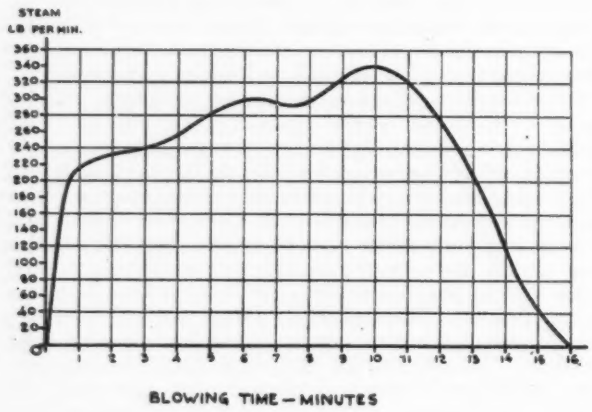

Fig. 2.

Let us, for the sake of comparison, assume a relatively old fashioned mill, with a cooking house equipped with 10 rotary digesters of 30 cu. m. each. Fig. 2 shows the quantities of vapor exhausted in the blowing of such a digester, and measured with a flow nozzle in the blow-off steam pipe. The dimensions of the flow nozzle were ample enough not to prolong the blowing-time appreciably. The blowing took 16 min., during which 1,700 kg. of steam was released. The peak load, which occurred during the latter part of the blowing period, amounted to 150 kg. of steam per min., and was 40 per cent above the average load. We may assume that 32 charges were cooked per diem in this mill. Accordingly, we obtain

$$x = \frac{1{,}700}{16 \times 150} = 0.71 \text{ and } y = \frac{32 \times 16}{24 \times 10} = 0.35,$$

ie., the utilisation factor, $x \times y$, will be 0·25.

Theoretically, the coefficient y might be raised to 1 by introducing a sufficiently large series of digesters, in which one blowing follows another consecutively. In practice, however, it will almost always be necessary, when the factor y increases above 0·5 or 0·6, to reckon with the possibility of two simultaneous blowings. This, in its turn, will reduce the factor x by another 50 per cent. The product xy will therefore normally never exceed 0·35 or 0·40, which agrees with the author's experience in some 20 blow-steam condenser installations in sulphate mills.

The gain in heating surface that might thus be expected from a change-over to a storage system, in which the utilisation factor is raised to 1, is considerable. But the greater part of this gain will again be lost owing to the reduced fall in the temperature. When water is heated from 10 to 70 deg. C., which latter temperature might be taken as normally needed for the washing process in the diffusers, an average temperature difference of about 60 deg. C. may be counted on in surface condensers, whilst in a liquor to liquor heat exchanger the corresponding difference will be only 30 deg. C. Provided the heat transmission factor is the same in both instances, this means that the quality figure, which in the former was reduced by the low utilization factor to 0.35 or 0.40 of the corresponding storage system value, has again been raised to about 0·70 to 0·80. The heat transmission factor in each particular apparatus will consequently finally decide the choice of apparatus calculated to give the smallest heating surface.

It has already been indicated that a satisfactory heat-transmission factor cannot be maintained in a surface condenser. Even if, to begin with, rusting is disregarded, the vapors from sulphate digesters contain both uncondensable vapors, which reduce the heat-transmission factor on the steam side, and fibers, which are liable to stick on the tubes of the surface condensers as a layer of relatively low heat conductivity. If the surface condensers are made of iron, as they are wherever the water used is not brackish or salt, intermittent working with air and steam or water alternately in contact with the heating surface will cause this to rust. The tubes in such surface condensers will therefore rarely last more than 3 or 4 years. In practice, it is thus hardly possible to reckon with higher k values than 500 to 800 cal. per sq. m. per deg. C. per hr. To maintain these k-values, the condensers must, moreover, be regularly cleaned.

The chances of maintaining a satisfactory heat transmission factor in the liquor to liquor heat exchanger of a storage system are considerably larger. This is due to the following reasons:—

The impure blow-steam is condensed in passing the jet condenser, and the uncondensable gases accompanying it are at the same time separated in the turbinate upper part

of the condensate tank. Any fibers carried over are collected on the bottom of the hot condensate tank, but (as further precaution) a filter is also placed before the condensate intake of the heat exchanger. Continuous work at steady and relatively high velocities excludes the possibility of even small fibers that might pass the filter being deposited in a spiral heat exchanger.

Corrosion on the condensate side is excluded, as the blow-steam condensate is of alkaline reaction. In all spiral heat exchangers used with jet condensers, whether made of iron or rustless material, the surfaces on the condensate side have thus remained perfectly clean. It is therefore possible to reckon that the *a* value will remain unchanged at between 6,000 and 12,000, according to the selected velocities and flow resistances.

Conditions on the side of the incoming water are correspondingly more favourable when a change is made to the storage system, as the constant high velocity reduces the risk of deposits and rusting. The quality of the incoming water determines the material. Iron or steel is used if the water is fresh, and rustless material if it is brackish or salt. On this side it is possible to reckon with *a*-values from 6,000 to 12,000 if the heating surfaces of the spiral heat exchanges are perfectly clean, but, owing to the possibility of scale forming on the iron, a reduction of 25 to 30 per cent of these values should be reckoned with in continuous work.

Calculated on the basis of the above *a* values, the heat transmission factor *k* in spiral heat exchangers for the above purposes will be from 1,800 to 3,200, even in continuous work without cleaning. According to the above, the normal value of the corresponding factor is from about 500 to 800 in a surface condenser, the heating surfaces of which will moreover require regular cleaning. Such a plant will not derive any particular advantage from a change-over to high-velocity heat exchangers, as the unavoidable scale on the heating surfaces will always remain the greatest obstacle to heat transmission. The saving in heating surface possibly resulting from a change-over to the storage system will thus primarily be ascribable to the improved heat-transmission factor, as this alone, according to the above, will save about 60 or 70 per cent of heating surface. The fact that the better utilisation factor will, as we have already seen, produce an additional saving of about 20 or 30 per cent, will increase the advantages still more. Where rustless material must in any circumstances be used for the heating surfaces, the saving in construction costs will be very considerable indeed, in spite of having to install more accumulators and pumps.

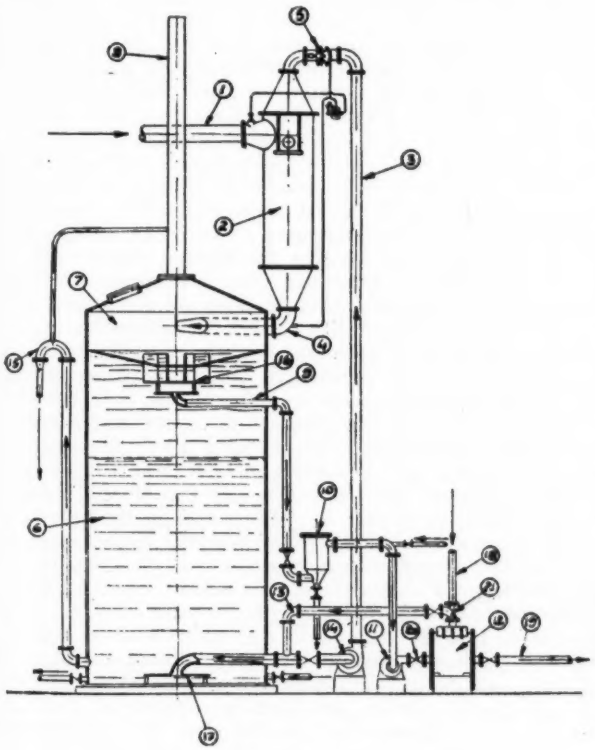

FIG. 3.

In a 45,000-ton sulphate mill, for instance, where rustless material has to be used in the condensers, it was found that a surface condenser plant would cost approximately twice as much as a complete storage blow-steam condenser, including tank, pump, and regulators.

Fig. 3 illustrates a storage blow-steam condenser plant for sulphate mills. The arrangement is as follows: the blow-steam from the digesters enters the jet condenser (2) through a pipe (1). The cooling medium enters this at the top through pipe (3). The condensate is drawn off from the bottom through the pipe (4). The temperature of the outgoing condensate is kept constant at about 95 deg. C. by a thermo-controlled valve (5). The hot condensate is collected in the upper part of the accumulator (6), in the turbinate top (7) of which the gas, which passes out through pipe (8), is first removed. The gas-free condensate is drawn off continuously through the pipe (9) by the pump (11) to the hot-water apparatus (12), where it is colled down to about 40 deg. C. The cooled condensate is returned to the lower part of the accumulator (6) through a pipe (13).

From here the cool condensate is taken by the pump (14) and pipe (3) to the jet condenser, to be used again for cooling. The surplus passes in an overflow pipe (15) to the drain, or to the by-product department. To prevent the hot and the cooled condensate from mixing, damping devices (16 and 17) are fitted at all the accumulator inlets and outlets. Water from the outside is brought to the hot-water apparatus through pipe (18), and is led in pipe (19) to the place where it will be used, or to a hot-water tank. The quantity of condensate fed to the hot-water apparatus (12) is regulated by a hand-operated valve (20) so that a constant quantity corresponding to the average load of the plant is admitted. This valve need only be adjusted once.

The temperatures stated above correspond roughly to normal working conditions. The sizes of the jet condenser, the hot-water apparatus, and the tank, are determined by the temperature of the cooled condensate. The lower the temperature, the smaller the jet condenser and the tank, but the larger the heating surface. High temperature will have the opposite effect. The temperature should be selected so as to obtain the lowest possible constructional costs.

The arrangement shown in Fig. 3 is now generally used for blow-steam condenser plants working on the storage system, both in sulphate and sulphite mills. Separate tanks for hot and cooled condensate were used in some of the early plants. Damping devices have proved effective in maintaining a well-marked separating layer between the hot and the cooled condensates in the same tank, double tanks have now been abandoned, with a consequent saving of about 50 per cent of the accumulator volume required.

Apart from blow-steam, exhaust vapor from the digesters and waste vapor from the other departments of the mill can also be fed to the blow-steam condenser plant, which is then developed into a central hot-water apparatus utilising all the waste vapors in the mill.

Sulphite Pulp Mills

The problems of heat recovery from the secondary vapors from the digester department are the same here as in the sulphate mills. There is also an additional problem, however, *viz.*, the recovery at the same time of the sulphur dioxide gas mixed with these vapors. Owing to the corrosive properties of this gas, it has not so far been possible to utilise the heat of these steam and gas mixtures as fully as in a sulphate mill. It has usually been considered sufficient to cool the gas to 40 deg. C. in large lead radiators, and to let the cooling water run to waste. Alternatively, both the sulphur dioxide and the steam are wholly wasted, *e. g.*, by blowing out the digester charges direct. Then, however, the pressure is reduced as far as possible before blowing out begins. In recent years, since the introduction of acid-proof steels, a plant has been designed in which it is not only possible to cool the sulphur dioxide, but also to recover to some extent the heat of the steam. However, the large peak loads occurring when the digesters are blown out or the lye is drawn off have prevented the introduction of simultaneous heat recovery, except in very rare instances.

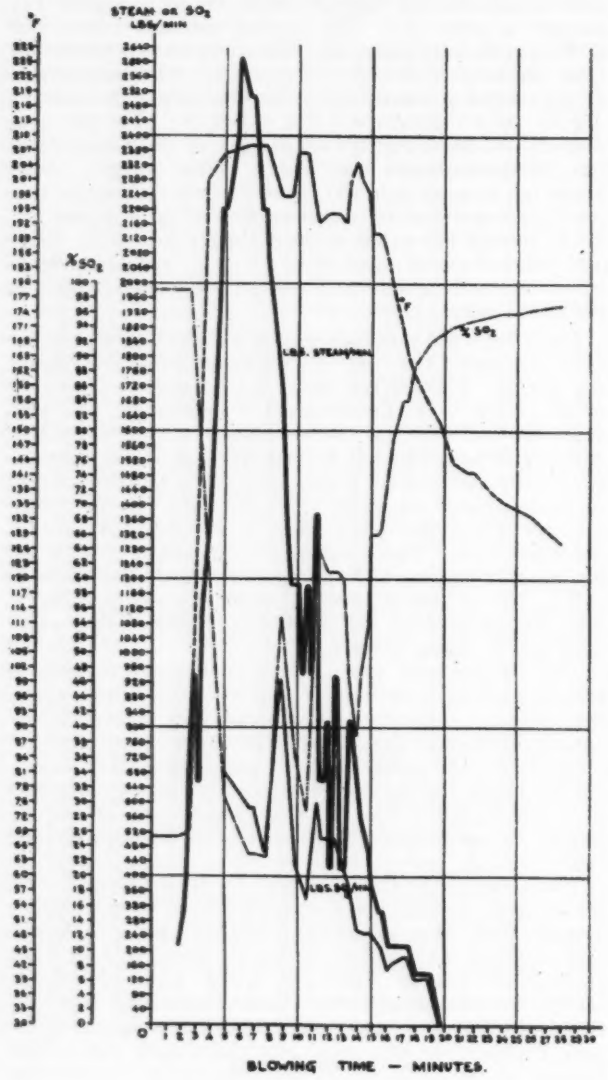

Fig. 4.

The blowing out of a digester means that, when the cooking process is completed and the pressure in the digester has been reduced so far that as much as possible of the sulphur dioxide gas has had time to be exhausted, the whole digester content is blown out to a stuff chest. A chimney, usually of wood, through, which the ascending vapors escape, is fitted above the stuff chest. The quantities of steam and sulphur dioxide lost depend on the quality of pulp produced and the original pressure at which the digesters are blown off. In view of the output of the mill, it is desirable to begin blowing the digester at the highest possible pressure, but this is limited by the larger losses of steam and chemicals which ensue.

Fig. 4 shows the quantities of steam, measured by a flow nozzle, and the percentage and total sulphur dioxide-content computed from the temperature and pressure used in a sulphite mill in blowing a digester of 162 cu. m. at an original temperature of 136 deg. C. The average steam for the whole blowing, which took 20 min., was 450 kg., and the peak load 1,200 kg. per min. As 8 charges a day were cooked in the whole digester department, a utilisation factor $xy = 0{\cdot}042$ was calculated in this case. This cannot be considered an exceptionally low value, as sulphate mills generally work with considerably larger digester units, though the blowing periods are nevertheless shorter than in the sulphate mills. (This applies more particularly to European conditions. In America, the sulphate mills, too, use very short blowing periods, as they do not—or only partly—recover the heat.)

In sulphite mills which draw off the liquor from the digesters before washing and emptying the pulp, as is practically always done in Sweden, the utilisation factor will be higher. A mill with 6 digesters of 250 cu. m. cooking 10 charges a day may be mentioned as a typical example of a place where the storage system is introduced. The quantity of liquor drawn off per hour from each charge is 110 cu. m. at 130 deg. C., which means that 6,000 kg. of steam and 3,000 kg. of sulphur dioxide are completely released. The peak load amounts to 196 kg. of steam a minute, containing 92 kg. of sulphur dioxide. Here the utilisation factor was computed to be 0·21. At this low figure, it is still obvious that the storage system will be more advantageous. However, there are instances where, owing to the long time taken to draw off the liquor, this factor is increased to 0·30 or 0·40. As all appliances, including the tank in a storage system, must be made of acid-proof material, there may be border cases where the storage system, at least for original cost, is less favorable. But the storage system has the advantage that the actual heat exchanged is placed in a lower temperature zone and works at a constant load under much more favorable conditions than a gas cooler introduced directly in the exhaust-gas pipe. As indicated above, the heat conductivity on the gas side will fall with the temperature of the sulphur dioxide-steam mixture, and the heat-transmission factor k on the steam side will therefore be gradually reduced. Even if an original a value of 7,000 may be assumed on the steam side, condensation to 60 deg. C. —when the steam part of the pressure only amounts to 0·20 kg. per cu. m.—will reduce this to 2,000 cal. per sq. m. per deg. C. per hr., provided the relation of a to the steam part of the pressure mentioned in the introduction is correct. The average a value in cooling from 100 to

60 deg. C. may be correspondingly estimated at 5,000 cal. per sq. m. per deg. C. per hr., as the heat-content of the sulphur dioxide-steam mixture at high temperatures will quickly decrease as the temperature falls. The heat-transmission factor of such an apparatus made of acid-proof material, *e. g.*, 3-mm. plates with a conductivity of about 7,000 on the water side, will be

$$\frac{1}{\frac{1}{5{,}000}+\frac{1}{700}+\frac{0.003}{25}} = 2{,}150 \text{ cal. per sq. m. per deg. C. per hr.}$$

The average steam temperature in the condenser ranging from 100-60 deg. C. is then computed to be 90 deg. C., because more heat is given off at higher temperatures. If water is assumed to be heated from 10 to 70 deg. C., the corresponding Δ_t will be 50 deg. C., and the corresponding quality figure $q = 2{,}150 \times 50 = 107{,}500$ cal. In this example the corresponding reduced quality figure $q_r = 0{\cdot}21$, $q = 22{\cdot}600$ cal. per sq. m. per hr.

When changing over to the storage system, a may correspondingly be assumed to be 7,000 cal. per sq. m. per deg. C. on both sides of the apparatus and

$$k = \frac{1}{\frac{1}{7{,}000}+\frac{1}{7{,}000}+\frac{0.003}{25}} = 2{,}500$$

for a plate thickness of 3 mm. Assuming the condensate to be cooled from 95 to 45 deg. C., and the water heated from 10 to 70 deg. C., *i.e.* $\Delta_t = 35$ deg. C., the quality figure q will be computed to be $35 \times 2{,}500 = 87{,}500$ cal. per sq. m. per hr., and the quality figure q_r at the same time correspondingly reduced.

A comparison between the computed quality figures in the above example is in favor of the storage system. But an increase as above of the utilisation factor to 0·30 or 0·40 may improve the quality figure in a surface condenser plant so much that the advantage of changing over to the storage system may become doubtful. It has, therefore, been attempted to make the latter competitive at low peak loads too, by using some cheaper material, say wood, for both jet condenser and condensate accumulator.

There is, however, a general desire to shorten the time of the whole cooking procedure, and thus to increase the capacity of the digester without increasing the number of units, and this is a sphere where the possibilities of the storage system are outstanding, because it will permit the emptying periods to begin relatively earlier without any risk of increased loss of sulphur dioxide or steam.

Fig. 5 shows how the storage system is arranged when the pulp is blown into closed stuff chests. Fig. 6 shows the corresponding arrangement for drawing off the black liquor in combination with heat recovery from it.

Recovery of Heat from Flue Gases

Flue gases of varying composition and moisture-content occur in most chemical industries. Chimney losses may be considerable, especially when the flue gases are very moist. Such gases have no very high quality figures. If, for instance, water is to be heated from 10 to 50 deg. C. and the flue gases cooled from 150 to 70 deg. C., the previously assumed k value of 40 cal. per sq. m. per deg. C. per hr. will give $q_r = 40 \times 80 = 3{,}200$ cal. per sq. m. per hr. But if the same gas is cooled down to say 50 deg. C. by direct injection of water, heated in counterflow, from 40 to 70 deg. C., a k value of 2,400 cal. per sq. m. per deg. C. per hr. may be obtained in a spiral heat exchanger. If the cooling liquid is cooled from 70 to 40 deg. C. and the incoming water still heated from 10 to 50 deg. C., Δ_t will be 25 deg. C. and $q_r = 25 \times 2{,}400 = 60{,}000$ cal. per sq. m. per hr. By the translation of flue-gas heat into warm water, the quality figure has thus been increased approximately twenty-fold.

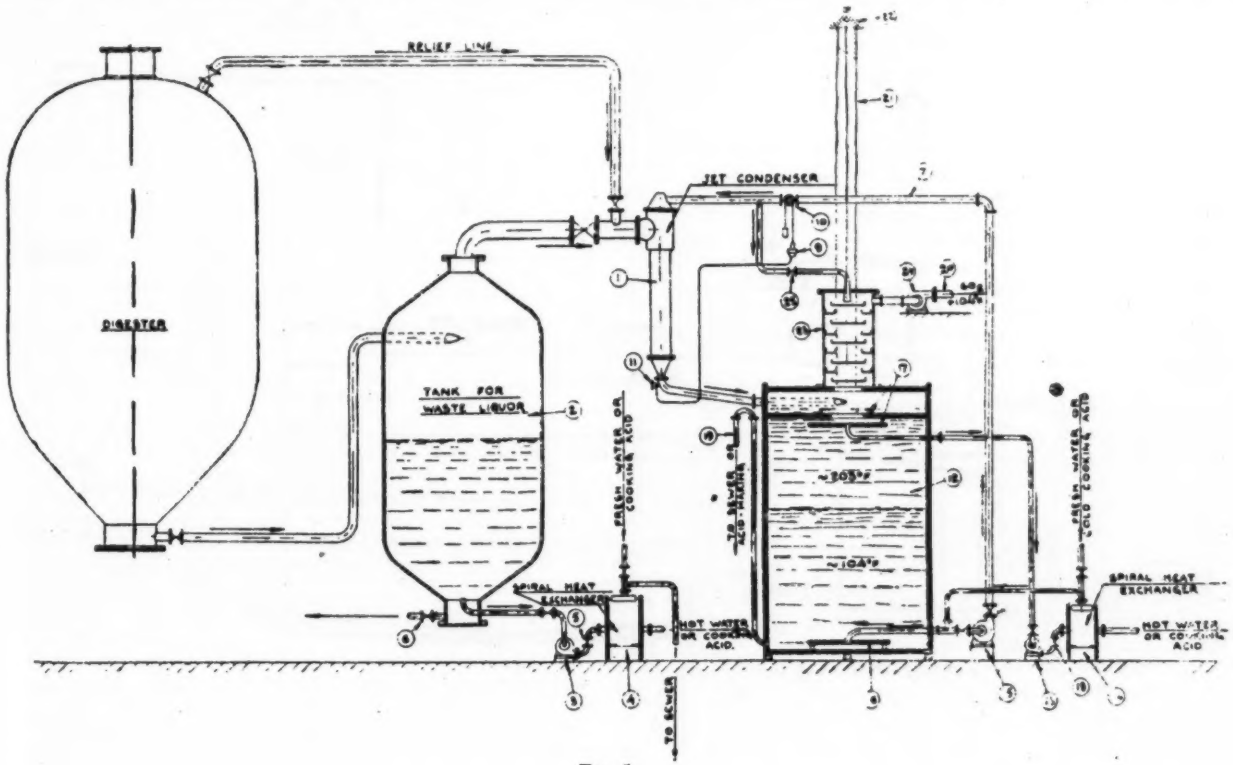

Fig. 5.

It must be remembered, however, that it is only possible under certain circumstances to raise the temperature of the cooling liquid to 70 deg. C. by direct injection in flue gases, even by a rational application of the counter-flow principle. This can only be done when the gas contains so much steam that its dew-point is as high as 70 deg. C. The upper dew-point, being determined by the original moisture-content of the gas plus the moisture absorbed by it in cooling down from the superheating temperature to the point of condensation, will consequently decide the possible temperature to which water can be raised by direct injection.

In liquor regeneration in sulphate pulp mills, the liquor is sometimes evaporated in evaporators and rotary furnaces by the direct heat of flue gases produced by the combustion of the dry residue. The moisture-content of such gases corresponds to a dew-point of up to 70 deg. C. So far, it has been impossible to utilise to any great extent the large amount of heat released in the condensation of such gases, principally because the question of materials has presented great difficulties. Flue gases from a soda house with rotary furnaces also vary considerably in quantity. The storage system could, however, be used with advantage here, and would at the same time make it possible to wash the gas and to recover the alkali it contains. The question has been brought to the fore since the sulphate mills have begun to build bleaching departments, which will greatly increase their requirements of hot water at temperatures up to 50 or 60 deg. C. An indirect advantage will also be gained because the gases are washed and freed from soot. Flue gases are at present washed both in the pulp and other industries, though generally not in combination with heat recovery. The introduction of the spiral heat exchanger, however, introduces new possibilities of combining flue-gas washing with heat recovery.

Other Uses for the Storage System

The above examples will probably suffice to indicate the general uses of the storage system. There are specific heat-recovery problems in every branch of industry. How to utilise the various sources of heat to the best advantage is best determined by a preliminary classification as indicated above, and any intermittent sources of heat should then be classified with a view to the utilisation of the heat, both direct by means of heating surfaces proportioned for peak loads, and in a storage system. The size of the heating surface required for either purpose can then be estimated. Apart from the saving in heating surface, other technical advantages obtainable are: diminished risks of scale and corrosion in the heat-transmission apparatus, centralisation of the sources of low heat, and—occasionally—better recovery of valuable chemical components in the latter.

Kalamazoo TAPPI to Meet

The Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry will hold a joint meeting with the Michigan Division of the Superintendents Association at the Park-American Hotel, Kalamazoo, Mich. at 6:30 p. m. Tuesday, January 26, 1937. This meeting will also be attended by the beatermen, machine operators, executives and office workers of the paper mills. The speakers will be Jacob Kindleberger of the Kalamazoo Vegetable Parchment Company, M. Sanborn of the General Electric Company and Frank Smith of the Sorg Paper Company, Middletown, Ohio.

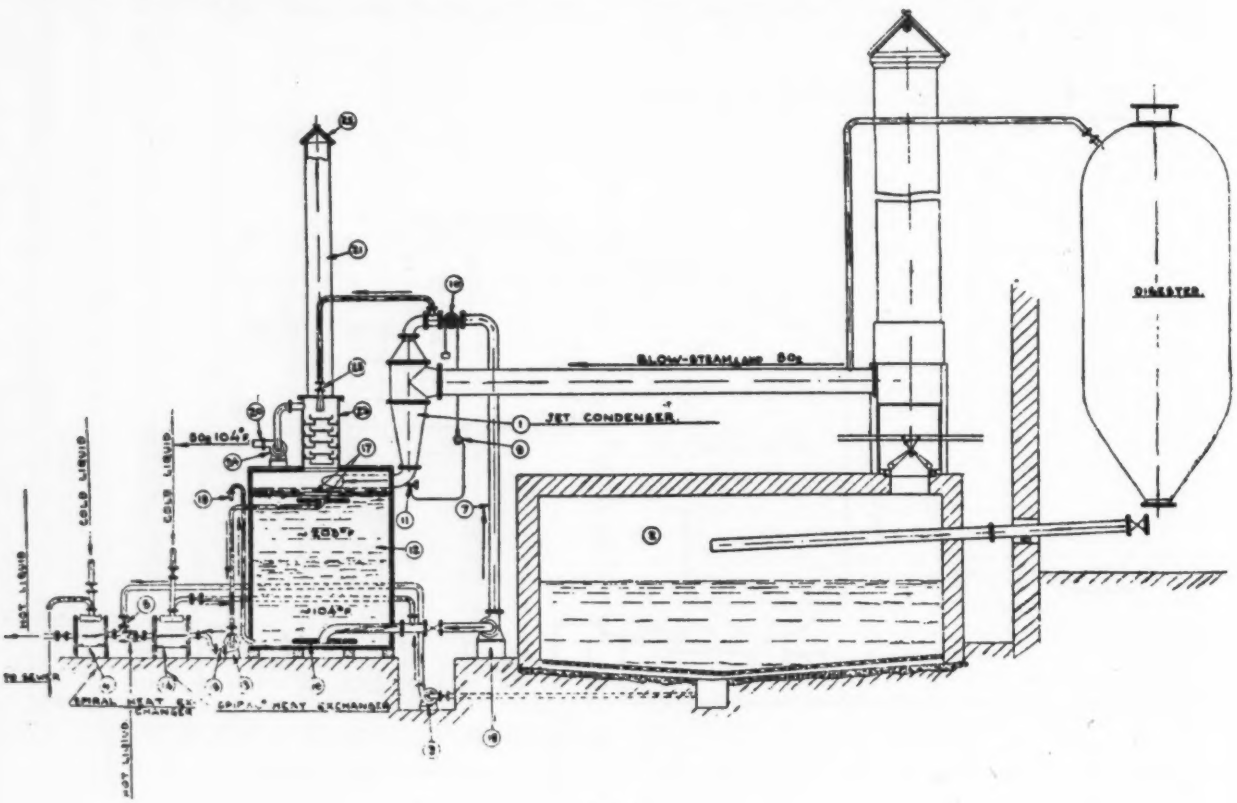

Fig. 6.

Lake States TAPPI Discusses Kraft Bleaching

The January meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry was held at the Conway Hotel, Appleton, Wis. at 6:30 p. m. on Tuesday, January 12, 1937. Over 130 members attended.

John Rue of Hooker Electrochemical Company read a paper on the "Bleaching of Kraft." Mr. Rue's paper was a comprehensive practical treatment of the subject. He divided bleached kraft into three ranges of brightness and discussed the different methods of procedure used for each range.

Dr. Rue concluded by stating that he believed there was a great future for the bleached kraft industry in the production of paper grades which have not been possible with chemical wood pulps hitherto available or for which other fibrous raw materials are too limited and too costly.

A very interesting general discussion followed Dr. Rue's paper. The paper will be published soon in the PAPER TRADE JOURNAL.

Vice-chairman Howard Morgan announced that the February meeting would be a symposium on sizing and the March meeting a symposium on drying.

Those Present

S. I. Aranovski, Institute of Paper Chemistry; M. J. Auchter, Hoberg Paper Mills, Green Bay, Wis.; Henry P. Baldwin, Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis.; W. T. Bannister, Standard Oil Company, Green Bay, Wis.; C. L. Bauer, Bauer Bros. Company, Springfield, Ohio; C. M. Beach, Southern Kraft Corporation, Marinette, Wis.; J. M. Behnke, Riverside Paper Corp., Appleton, Wis.; Paul Boronow, Valley Iron Works, Appleton, Wis.; R. W. Brenzel, Thilmany Pulp and Paper Company, Kaukauna, Wis.; M. A. Buchanan, Institute of Paper Chemistry; W. H. Burns, Valley Iron Works Co., Appleton, Wis.

R. G. Carson, Solvay Sales Corporation, Chicago, Ill.; Glenn Carroll, Combined Locks Paper Company, Combined Locks, Wis.; C. H. Child, Southern Kraft Corporation, Marinette, Wis.; W. C. Christensen, Hoberg Paper Mills, Green Bay, Wis.; R. C. Cooper, Marathon Paper Mills, Rothschild, Wis.; H. E. Cooper, Marathon Paper Mills, Rothschild, Wis.; H. C. Crandall, Mosinee Paper Mills Company, Mosinee, Wis.; H. C. Crane, The Fannon Trading Company, Appleton, Wis.; A. L. Casler, Bauer Bros. Company, Springfield, Ohio; E. E. Den Dooven, Hoberg Paper Mills, Green Bay, Wis.; A. J. Detrie, Standard Oil Company, Green Bay, Wis.; G. K. Dickeunan, Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis.

W. A. Fannon, Fannon Trading Company, Appleton, Wis.; J. R. Fanselow, Kimberly-Clark Corporation, Neenah, Wis.; W. P. Feeney, Appleton, Wis.; W. J. Foote, Institute of Paper Chemistry, Appleton, Wis.; A. T. Gardner, Combined Locks Paper Company, Appleton, Wis.; D. L. Garlick, Allegheny Steel Company, Milwaukee, Wis.; La Verne Gilberson, Menasha Paper Products Company, Menasha, Wis.; J. H. Graff, Institute of Paper Chemistry, Appleton, Wis.; Buster Griffiths, Heller & Merz, Milwaukee, Wis.; J. W. Grimes, Standard Oil Co., Chicago, Ill.; W. R. Grunow, Allegheny Steel Company, Brackenridge, Pa.; A. J. Hayes, Nekoosa Edwards Company, Port Edwards, Wis.; W. J. Highie, Hercules Powder Company, Inc., Paper Makers Chemical Division, Kalamazoo, Mich.; R. N. Hollands, Marathon Paper Mills Company, Menasha, Wis.; H. T. Holbrook, Wadhams Oil Company, Milwaukee, Wis.

J. F. Inderdohnen, The Bristol Company, Waterbury, Conn.; E. C. Jacobi, A. E. Broughton Company, Glenns Falls, N. Y.; Hans John, Kimberly Clark Corporation, Neenah, Wis.; H. S. Johnston, Fox River Paper Company, Appleton, Wis.; M. J. Ketter, Hoberg Paper and Fiber Company, Green Bay, Wis.; A. G. Kernin, Mosinee Paper Mills Company, Mosinee, Wis.; F. G. Kilp, Nekoosa Edwards Paper Company, Port Edwards, Wis.; R. P. Kirkiner, Magnus Chemical Company, Appleton, Wis.

R. G. Knechtges, Northern Paper Mills Company, Green Bay, Wis.; W. K. Kolb, Combined Locks Paper Company, Combined Locks, Wis.; Otto Kress, Institute of Paper Chemistry, Appleton, Wis.; Joseph Krysiak, Wisconsin Tissue Mills, Menasha, Wis.; D. Kuhe, Southern Kraft Corporation, Marinette, Wis.; Stephen Kukolich, Neenah, Paper Company, Neenah, Wis.

R. J. LeRoux, Consolidated Water Power and Paper Company, Appleton, Wis.; J. O. Logan, Mathison Alkali Works, New York, N. Y.; H. R. Mathias, Standard Oil Company, Green Bay, Wis.; A. May, Thilmany Pulp and Paper Company, Kaukauna, Wis.; E. R. MacLaren, Albany Felt Company, Albany, N. Y.; William H. Monsson, Evanston, Ill.; R. A. Nugent, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; J. E. O'Donnell, Independent Rubber Company, Chicago, Ill.; T. H. Oilschlager, Neekosa-Edwards Paper Company, Port Edwards, Wis.; L. E. Pagel, Marathon Paper Mills Company, Rothschild, Wis.; T. A. Pascoe, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; F. G. Paulick, Mosinee Paper Mills Company, Mosinee, Wis.; P. A. Paulson, Paulson & Wells, Appleton, Wis.; Frank Pelot, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; D. F. Petersen, Bergstrom Paper Company, Neenah, Wis.; Ernest Peterson, Mosinee Paper Mills Company, Mosinee, Wis.; H. R. Peterson, Standard Oil Company, Chicago, Ill.; A. Phillips, Consolidated Water Power and Paper Company, Appleton, Wis.

D. C. Porter, Kimberly-Clark Corporation, Kimberly, Wis.; W. B. Pusey, Valley Iron Works, Appleton, Wis.; Ralph H. Reed, Standard Oil Company, Green Bay, Wis.; C. H. Reese, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; H. B. Richmond, Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis.; A. W. Ridlin, Kimberly-Clark Corporation, Neenah, Wis.; Will Risk, Wadhams Oil Company, Appleton, Wis.; J. A. Roskams, Hoberg Paper and Fiber Company, Green Bay, Wis.; R. D. Rusch, Institute of Paper Chemistry, Appleton, Wis.

G. W. Sawyer, Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis.; John Schuber, Solvay Process Company, Syracuse, N. Y.; Howard Sheldon, Hoberg Paper and Fibre Company, Green Bay, Wis.; F. G. Sherman, E. F. Houghton & Company, Appleton, Wis.; W. A. Shreson, Hoberg Paper and Fibre Company, Green Bay, Wis.; H. A. Skinner, Marathon Paper Mills Company, Rothschild, Wis.; J. E. Spaulding, Institute of Paper Chemistry, Appleton, Wis.; William Springer, Patten Paper Company, Appleton, Wis.; Fred Stolz, Fort Howard Paper Company, Green Bay, Wis.; C. W. Suprison, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; P. G. Smith, Northern Paper Mills, Green Bay, Wis.

M. J. Taylor, Patten Paper Company, Appleton, Wis.; R. W. K. Ulm, Institute of Paper Chemistry, Appleton, Wis.; I. R. Valentine, Jr., Fox River Paper Company, Appleton, Wis.; R. A. Vanderstein, Hoberg Paper and

Fibre Company, Green Bay, Wis.; R. J. Vechinski, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; E. J. Vickman, Hoberg Paper and Fibre Company, Green Bay, Wis.; R. B. Vogt, Consolidated Water Power and Paper Company, Appleton, Wis.; E. H. Voigtman, Kimberly-Clark Corporation, Neenah, Wis.; S. D. Wells, Combined Locks, Wis.; J. P. Weidener, Institute of Paper Chemistry, Appleton, Wis.; A. D. Wilkinson, Kimberly-Clark Corporation, Kimberly, Wis.; E. R. Williams, Neenah Paper Company, Neenah, Wis.; D. B. Wicker, Thilmany Pulp and Paper Company, Kaukauna, Wis.; J. V. Ziemann, Southern Kraft Corporation, Kaukauna, Wis.; R. J. Zaumeyer, Kimberly-Clark Corporation, Neenah, Wis.

TAPPI Notes

The annual meeting program of the Technical Association to be presented at the Waldorf-Astoria in New York on February 22-25, 1937 will be one of the best ever offered and justifies the largest attendance in the Association's history.

Flavius J. Sebeste formerly with the Union Bag and Paper Company, Hudson Falls, N. Y. is now with the Mohawk Paper Mills, Cohoes, N. Y.

Paul Dieterle formerly with the Louis Dejonge Company, Staten Island, N. Y.

H. K. Hamilton recently with Aldine Paper Company in New York, is now with Kupfer Brothers, coated paper makers, New York.

John D. Lyall formerly with A. E. Broughton Company, Glens Falls, N. Y. is now with the Armstrong Cork Company, Lancaster, Pa.

C. R. P. Cash has been appointed assistant superintendent, Champion Paper and Fibre Company, Houston, Texas.

E. W. Gutliph formerly with Bloomer Brothers Company, Newark, N. Y. is now with Brownsville Board Company, Brownsville, N. Y.

Donald Appleton who was formerly with Champion International Paper Company, Lawrence, Mass. is now with Oxford Miami Paper Company, West Carrollton, Ohio.

Inter-Society Color Council of which TAPPI is a member, will hold its annual meeting at the Waldorf-Astoria Hotel, New York, at 2:00 p. m. on Thursday, February 25, 1937. All members of TAPPI interested in color will be welcome to attend. On Thursday evening there will be a meeting of the Council at Earl Hall, Columbia University, at which time an interesting program will be offered.

The Association has recently issued a large number of loose-leaf pages to members who have the book of TAPPI Standards. A feature of these pages is the use of the new code numbers which include the year of issue of each standard. Any member of TAPPI may obtain a book of Standards on request.

Waste Disposal in Wisconsin

The Advisory Committee on Waste Disposal of the Wisconsin Pulp and Paper Industry met with officials of the Wisconsin State Committee on Water Pollution at Madison, Wis., January 12, at which time the work accomplished in 1936 was reviewed and plans laid for attacking the problem of stream pollution during the coming year of 1937.

State officials summarized the results of sewer surveys made at the various mills in the State during 1936, and also on the stream surveys throughout the State on which paper and pulp mills are located, giving the oxygen balance on these streams for the spring, summer, and fall of 1936. On the whole, stream conditions in the State were fairly good in 1936. The only prolonged spell of septic conditions being on the lower Fox River during the period of low water flow in the late summer of 1936.

There was no serious epidemic of dying fish in 1936, but this was attributed more to flow conditions and temperature than to any material improvements in stream purification, as the figures accumulated by the State indicated that there was no material improvement in wastes emptied into Wisconsin streams by the pulp and paper industry in 1936 over previous years.

The mills and mill laboratories of the paper industry in the State will again be used by State officials during 1937 to continue stream surveys and mill sewer surveys, and in special cases minor research projects, all looking towards further stream improvements by the industry.

New Thwing-Albert Portable pH Meter

The Thwing-Albert Instrument Company, 3339-41 Lancaster avenue, Philadelphia, has just issued Bulletin M-361A which describes the new Thwing-Albert Portable pH Meter.

This leaflet contains a short and easily understandable treatise on pH and how it is measured. This bulletin describes two models. Model 1, is a simple potentiometric circuit with quinhydrone or antimony electrodes or both. Model 2, is a vacuum tube type, with quinhydrone, antimony or glass electrodes. It operates equally well on all three.

Model 1 can easily be converted to Model 2 at any time. Both models are direct reading in pH and were especially designed to take the mystery out of pH measurement. Any non-technical person can learn to use this successfully in a very short time.

The Thwing-Albert Portable pH Meter is especially adapted to potentiometric titrations. Among other useful applications of potentiometric titrations is the making up of solutions to a definite pH.

The operation of this instrument is entirely independent of color, turbidity, or suspended matter in solutions.

Combination Incinerator and Evaporator

Ralph J. Serpas, 1811 Second avenue, South, Minneapolis, Minn., was granted a United States patent No. 2,064,953, as of December 22, 1936 on a combination evaporator and incinerator.

The combination evaporator and incinerator is an upright cylindrical apparatus in which the liquor to be burnt enters through the top in a series of shelves which have means to drop the liquor to the succeeding shelves. Beneath these shelves is a group of bars placed at right angles to each other, and below these is the fire box. The liquor coming through the shelves absorbs all the heat and the dust particles from the combusted ash. None of the heat and dust can be lost as these take a tortuous path as they come in contact with the descending liquor.

As the liquor reaches the group of bars it is concentrated to a degree that will not permit it to flow freely, hence the bars may be rotated.

The fuel value of the liquor is expected to furnish all the necessary fuel for combustion, but where an emergency exists additional fuel may be furnished by electrically heating the bars.

This is said to be the first combination evaporator and incinerator of this nature yet devised.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING JANUARY 16, 1937

CIGARETTE PAPER

Standard Products Corp., *Guyane,* Havre, 66 cs.; De Mauduit Paper Corp., *Guyane,* Havre, 1 cs.; De Mauduit Paper Corp., *Paris,* Havre, 1 cs.; Champagne Paper Corp., *Paris,* Havre, 788 cs.; H. H. Strauss, *Paris,* Havre, 559 cs.; Standard Products Corp., *Paris,* Havre, 36 cs.

WALL PAPER

———, *Bremen,* Bremen, 31 cs., 3 bls.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Banker,* London, 11 bls.

WALL BOARD

Treetex Corp., *Nanking,* Kopmanholmen, 2,450 bdls.

NEWSPRINT

N. Y. Evening Journal, *Markland,* Liverpool, N. S., 582 rolls; N. Y. Tribune, *Markland,* Liverpool, N. S., 1,641 rolls; World Telegram, *Markland,* Liverpool, N. S., 614 rolls; Brooklyn Daily Eagle, *Markland,* Liverpool, N. S., 605 rolls; Parsons & Whittemore, Inc., *Markland,* Liverpool, N. S., 425 rolls.

PRINTING PAPER

W. Bersch & Co., *Gerolstein,* Antwerp, 15 cs.; Steiner Paper Corp., *Gerolstein,* Antwerp, 26 cs.

WRAPPING PAPER

Japan Paper Co., *Black Hawk,* Antwerp, 2 cs.

PACKING PAPER

A. J. Bullinger, *Black Hawk,* Rotterdam, 11 cs.; ———, *Excalibur,* Genoa, 30 bls.

FILTER PAPER

J. Manheimer, *Aquitania,* Southampton, 143 pkgs., 2 bls., 1 cs.; H. Reeve Angel & Co. Inc., *Aurania,* London, 15 cs.

DRAWING PAPER

H. Reeve Angel & Co. Inc., *Aurania,* London, 3 cs.

COATED PAPER

W. J. Byrnes, *Aquitania,* Southampton, 5 cs.

COLORED PAPER

C. H. Asche & Co., *Black Hawk,* Antwerp, 8 pkgs.; D. C. Andrews & Co., *Bremen,* Bremen, 3 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *Andania,* Liverpool, 21 cs. (duplex).

DECALCOMANIAS

Sellers Transportation Co., *Bremen,* Bremen, 19 cs.

TRANSFER PICTURES

Rohner Gehrig & Co., *Bremen,* Bremen, 11 cs.

TISSUE PAPER

Van Oppen & Co., *Excalibur,* Genoa, 11 cs.; B. F. Drakenfeld & Co., *Andania,* Liverpool, 6 cs.; M. Snedeker Corp., *American Banker,* London, 2 cs.

NOTE PAPER

H. Reeve Angel & Co. Inc., *Aurania,* London, 1 cs.

LINING PAPER

Yardley & Co., *Aurania,* London, 13 cs.

MISCELLANEOUS PAPER

Japan Paper Co., *G. Maersk,* Kobe, 97 cs.; Horman Schutte & Co., *Excalibur,* Genoa, 10 cs.; Keller Dorian Paper Co., *Excalibur,* Marseilles, 5 cs.; Gluckman & Strauch, *Paris,* Havre, 1 cs.

RAGS, BAGGINGS, ETC.

Chase National Bank, *Quaker City,* Dundee, 61 bls. paper stock; Castle & Overton, Inc., *Quaker City,* Dundee, 100 bls. paper stock; ———, *Quaker City,* Dundee, 62 bls. paper stock; ———, *Quaker City,* Leith, 194 bls. rags; Acadia Manufacturing Supply Co., *Quaker City,* Manchester, 8 bls. rags; ———, *Quaker City,* Manchester, 76 bls. cotton waste; ———, *Quaker City,* Liverpool, 73 bls. bagging; Continental Bank Trust Co., *Black Heron,* Rotterdam, 59 bls. bagging; E. J. Keller Co. Inc., *Black Heron,* ———, 38 bls. rags, 421 bls. bagging; Darmstadt Scott & Courtney, *Black Heron,* Antwerp, 144 bls. rags, 62 bls. bagging, 58 bls. jute waste; J. Eisenberg, *Black Heron,* Antwerp, 4 bls. rags; ———, *Black Heron,* Antwerp, 81 bls. rags; Irving Trust Co., *Black Heron,* Antwerp, 69 bls. rags, 40 bls. bagging; Boger Cotton Products Co., *Black Heron,* Antwerp, 33 bls. cotton waste; Brandwein Mazur & Co., *G. Maersk,* Shanghai, 300 bls. cotton waste; O'Brien Padawer Co., *G. Maersk,* Shanghai, 50 bls. cotton waste; New England Waste Co., *G. Maersk,* Shanghai, 676 bls. cotton waste; J. J. Ryan & Sons, Inc., *G. Maersk,* Shanghai, 100 bls. cotton waste; E. J. Keller Co. Inc., *G. Maersk,* ———, 50 bls. cotton waste; Birkenstein & Long, *G. Maersk,* Kobe, 334 bls. rags; Chase National Bank, *G. Maersk,* Kobe, 55 bls. rags; W. Steck & Co., *G. Maersk,* Kobe, 120 bls. hemp waste; Banco Coml. Italiane Trust Co., *G. Maersk,* Kobe, 60 bls. rags; S. Shapiro & Son, *Ravnefjell,* Antwerp, 23 bls. rags; National City Bank, *Ravnefjell,* Antwerp, 170 bls. rags; Van Oppen & Co., *Ravnefjell,* Antwerp, 266 bls. bagging; Darmstadt Scott & Courtney, *Ravnefjell,* Antwerp, 23 bls. jute waste; Chase National Bank, *Ravnefjell,* Antwerp, 107 bls. jute waste; Irving Trust Co., *Ravnefjell,* Antwerp, 150 bls. jute waste; ———, *Idefjord,* Piraeus, 173 bls. dark cottons, 34 bls. rags; Great Eastern Packing & Paperstock Corp., *Veendam,* Rotterdam, 148 bls. bagging; ———, *Maria,* Trieste, 90 bls. rags; Guaranty Trust Co., *Maria,* Trieste, 168 bls. rags; Darmstadt Scott & Courtney, *P. N. Damm,* Gdynia, 244 bls. rags; W. Steck & Co., *P. N. Damm,* Gdynia, 67 bls. rags; J. Cohen & Son Co., Inc., *Aurania,* London, 24 bls. rags; I. Abela & Co., *Giulia,* Malta, 50 bls. rags; R. & V. Miller, Inc., *Black Hawk,* Antwerp, 16 bls. rags; F. Stern, *Black, Hawk,* Rotterdam, 57 bls. rags; Van Oppen & Co., *Black Hawk,* Rotterdam, 97 bls. rags; Irving Trust Co., *Black Hawk,* Rotterdam, 165 bls. bagging; D. Benedetto, *Black Hawk,* Rotterdam, 82 bls. rags; Atlas Waste Manufacturing Co., *Black Hawk,*

Rotterdam, 7 bls. bagging scrap; E. J. Keller Co. Inc., *Black Hawk,* ———, 154 bls. bagging, 59 bls. paper stock; E. J. Keller Co. Inc., *Gerolstein,* ———, 565 bls. flax waste; National City Bank, *Gerolstein,* Antwerp, 145 bls. jute waste; ———, *Gerolstein,* Antwerp, 96 bls. rags; Philadelphia National Bank, *Gerolstein,* Antwerp, 100 bls. rags; ———, *Andania,* Liverpool, 88 bls. rags, 32 bls. thread waste; ———, *American Importer,* Manchester, 72 bls. cotton waste, 147 bls. rags; E. Butterworth & Co. Inc., *American Importer,* Manchester, 251 bls. paper stock; Chase National Bank, *American Importer,* Manchester, 40 bls. rags, 118 bls. bagging; S. Frankenhuis & Son, *American Importer,* Manchester, 55 bls. cotton waste; M. Snedeker Corp., *American Importer,* Belfast, 98 bls. paper stock; J. Cohen & Son Co. Inc., *American Importer,* Belfast, 79 bls. paper stock; ———, *American Importer,* Belfast, 39 bls. paper stock; ———, *Batory,* Gdynia, 278 bls. rags; A. W. Fenton, Inc., *American Banker,* London, 69 bls. paper stock; E. J. Keller Co. Inc., *Kurama Maru,* ———, 100 bls. rags; Globe Sanitary Products Corp., *Kurama Maru,* Kobe, 13 bls. rags; E. J. Keller Co. Inc., *Liberty,* ———, 2 bls. paper stock; E. J. Keller Co. Inc., *Hamburg,* ———, 100 bls. cotton waste.

GLUE STOCK, ETC.

———, *Vulcania,* Trieste, 900 bags bone glue; ———, *Vulcania,* Trieste, 100 bags hide glue.

OLD ROPE

———, *Quaker City,* Liverpool, 82 coils; W. Steck & Co., *Gitano,* Newcastle, 77 coils; E. J. Keller Co. Inc., *Black Hawk,* ———, 139 coils; Chase National Bank, *American Banker,* London, 62 coils.

CASEIN

Balfour Guthrie & Co., *Southern Cross,* Buenos Ayres, 417 bags.

WOOD PULP

———, *Black Heron,* Rotterdam, 607 bls. wood pulp; Price & Pierce, Ltd., *Nanking,* Kopmanholmen, 1,350 bls. unbleached sulphite; Price & Pierce, Ltd., *Nanking,* Kopmanholmen, 900 bls. unbleached sulphate; Gottesman & Co. Inc., *Nanking,* Kopmanholmen, 1,500 bls. sulphite; Gottesman & Co. Inc., *Nanking,* Kopmanholmen, 4,200 bls. sulphate; Pagel Horton & Co. Inc., *Nanking,* Kopmanholmen, 3,055 bls. sulphite; Perkins Goodwin & Co., *Nanking,* Kopmanholmen, 150 bls. sulphate; ———, *Nanking,* Kopmanholmen, 949 bls. chemical pulp; ———, *Giulia,* Trieste, 266 bls. wood pulp; Guaranty Trust Co., *Giulia,* Trieste, 1,489 bls. wood pulp; Bulkley Dunton & Co., *Wirta,* ———, 2,625 bls. sulphite, 525 tons; Bulkley Dunton & Co., *Wirta,* ———, 3,250 bls. sulphate, 650 tons; ———, *Wirta,* Hernosand, 3,900 bls. sulphite; ———, *Wirta,* Hernosand, 300 bls. sulphate; Johaneson Wales & Sparre, Inc., *Wirta,* Sundsvall, 4,775 bls. sulphite, 850 tons; Johaneson Wales & Sparre, Inc., *Wirta,* Sundsvall, 250 bls. chemical pulp, 50 tons; Mead Sales Co., *Wirta,* Sundsvall, 210 bls. chemical pulp, 42 tons; Mead Sales Co., *Wirta,* Sundsvall, 210 bls. sulphite, 42 tons; Bulkley Dunton & Co., *Sandhamn,* ———, 1,875 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING JANUARY 16, 1937

Gottesman & Co. Inc., *Delaware,* Sweden, 7,575 bls. wood pulp; Gottesman & Co., *Vestvard,* Sweden, 1,620 bls. wood pulp; Bulkley Dunton & Co., *Bessa,* ———, 2,550 bls. wood pulp; Bulkley Dunton & Co., *Nordvard,* ———, 1,250 bls. wood pulp; Bulkley Dunton & Co., *Delaware,* ———, 2,375 bls. wood pulp.

NEW LONDON IMPORTS

WEEK ENDING JANUARY 16, 1937

Bulkley Dunton & Co., *Wirta,* ———, 1,500 bls. sulphite, 300 tons; ———, *Wirta,* Hernosand, 3,600 bls. sulphate; Johaneson Wales & Sparre, Inc., *Wirta,* Sundsvall, 1,750 bls. sulphite, 350 tons.

BOSTON IMPORTS

WEEK ENDING JANUARY 16, 1937

International Purchasing Co., *Gitano,* Hull, 117 coils old rope; Royal Manufacturing Co., *G. Maersk,* Shanghai, 100 bls. cotton waste; ———, *G. Maersk,* Shanghai, 600 bls. rags; ———, *Black Hawk,* Antwerp, 245 bls. cotton waste, 150 bls. rags; Stone & Downer, *Black Hawk,* Antwerp, 116 rolls wrapping paper; Leigh Textile Co., *Black Hawk,* Antwerp, 14 bls. cotton waste; Royal Manufacturing Co., *Black Hawk,* Antwerp, 156 bls. cotton waste; ———, *Black Hawk,* Antwerp, 145 bls. flax waste; D. Benedetto, *Black Hawk,* Rotterdam, 71 bls. paper stock, 174 bls. rags; ———, *Black Hawk,* Rotterdam, 227 bls. rags; C. H. Powell Co., *Black Hawk,* Rotterdam, 297 rolls straw board; E. J. Keller Co. Inc., *Black Hawk,* ———, 295 bls. rags; Bulkley Dunton & Co., *Fernbank,* ———, 2,720 bls. wood pulp; Gottesman & Co. Inc., *Cliffwood,* Sweden, 5,100 bls. wood pulp; Gottesman & Co. Inc., *Vingaren,* Sweden, 2,180 bls. wood pulp; Price & Pierce, Ltd., *Cliffwood,* ———, 450 bls. unbleached sulphite; Price & Pierce, Ltd., *Cliffwood,* ———, 600 bls. unbleached mechanical; Price & Pierce, Ltd., *Cliffwood,* ———, 9,990 bls. unbleached sulphate; Gottesman & Co. Inc., *Wiiri,* Finland, 250 bls. wood pulp; E. J. Keller Co. Inc., *Veendam,* ———, 629 bls. paper stock.

PHILADELPHIA IMPORTS

WEEK ENDING JANUARY 16, 1937

———, *Quaker City,* Hamburg, 923 rolls, 3 bls. wrapping paper; Price & Pierce, Ltd., *Nanking,* Sweden, 585 bls. chemical pulp; Price & Pierce, Ltd., *Nanking,* Sweden, 750 bls. sulphite; Guaranty Trust Co., *Nanking,* Sweden, 1,200 bls. sulphite; Guaranty Trust Co., *Nanking,* Sweden, 2,400 bls. sulphate; Treetex Corp., *Nanking,* Sweden, 1,985 bdls. wall board; ———, *G. Maersk,* Kobe, 334 bls. rags; ———, *G. Maersk,* Yokohama, 323 bls. rags; Guaranty Trust Co., *Maria,* Trieste, 170 bls. wood pulp; Guaranty Trust Co., *Giulia,* Trieste, 1,242 bls. wood pulp; ———, *Giulia,* Trieste, 334 bls. wood pulp; ———, *Giulia,* Trieste, 21 bls. rags; Bulkley Dunton & Co., *Wirta,* ———, 250 bls. sulphite, 50 tons; Bulkley Dunton & Co., *Wirta,* ———, 500 bls. sulphate, 100 tons; Perkins Goodwin & Co., *Wirta,* Hernosand, 250 bls. mechanical pulp; Johaneson Wales & Sparre, Inc., *Wirta,* Sundsvall, 780 bls. sulphite, 150 tons; Mead Sales Co., *Wirta,* Sundsvall, 2,700 bls. sulphite, 450 tons; Perkins Goodwin & Co., *Wirta,* Sundsvall, 536 rolls newsprint; Atterbury Bros. Inc., *Wirta,* Sundsvall, 894 bls. dry pulp; Bulkley Dunton & Co., *Sandhamn,* ———, 750 bls. wood pulp; E. J. Keller Co. Inc., *Cypria,* ———, 119 bls. paper stock.

WILMINGTON IMPORTS

WEEK ENDING JANUARY 16, 1937

Price & Pierce, Ltd., *Nanking,* Sweden, 8,400 bls. sulphite; Price & Pierce, Ltd., *Nanking,* Sweden, 6,600 bls. chemical pulp; Pagel Horton & Co. Inc., *Nanking,* Sweden, 10,500 bls. sulphite,; ———, *Nanking,* Sweden, 1,714 bls. chemical pulp.

BALTIMORE IMPORTS

WEEK ENDING JANUARY 16, 1937

Congoleum Nairn Co., *Black Heron,* Antwerp, 728 bls. rags; W. H. Masson, *Black Heron,* Antwerp, 55 coils old rope; N. Y. Trust Co., *Maria,* Trieste, 300 bls. wood pulp; Pagel Horton & Co. Inc., *Gunda,* Sweden, 5,400 bls. sulphate; Bulkley Dunton & Co., *City of Havre,* ———, 248 bls. wood pulp; Bulkley Dunton & Co., *Black Tern,*

(Continued on page 52)

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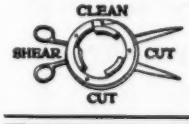

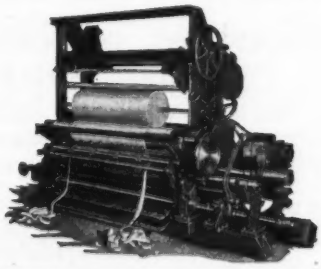

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CELLULOSEFABRIKS A.-G.
Bratislava, Czecho-Slovakia
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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, January 20, 1937.

Sentiment in the local paper market is decidedly optimistic. Demand for the various grades of paper is well sustained and, in some instances, there is some difficulty in filling orders. Sales forces of the leading paper organizations are very active at present. Prices are steady to firm.

The newsprint paper market is stronger. Manufacturing operations in the United States, Canada and Newfoundland are proceeding at near capacity to take care of current requirements. The recently announced higher prices are now in effect. In some quarters, a firm spot market is anticipated.

Conditions in the fine paper market are improving. It is reported that some manufacturers of book paper are advancing their quotations $5 per ton. Tissues are moving in good volume. The kraft paper market is sharing the general business improvement. Paper board prices are stronger.

Mechanical Pulp

The position of the ground wood pulp market is practically unchanged. Production in the United States, Canada and abroad is being maintained in good volume for the time of year. The contract movement is well up to average. Prices are holding to formerly quoted levels.

Chemical Pulp

Inquiries for the various grades of chemical pulp are numerous. Offerings are scarce, however, with the result that prices continue very firm. Domestic and imported bleached sulphite is now selling at from $2.70 to $3.75, on dock, Atlantic ports. Other grades are displaying strength.

Old Rope and Bagging

The old rope market is exhibiting a stronger undertone. Demand for domestic and foreign old manila rope is fairly active. Prices are steady to firm. The bagging market is showing signs of improvement. Both scrap and gunny bagging are in good request. Roofing bagging is seasonally active.

Rags

Business in the domestic rag market is fairly brisk. Demand for new cotton rags is holding up well. Quotations on shirt cuttings are higher. No. 1 new white shirt cuttings are now offered at from 8.37½ to 8.62½; New unbleached at from 8.75 to 9.00 and Silesias No. 1 at from 6.75 to 7.00, f.o.b. New York.

Waste Paper

The paper stock market is much firmer, especially the higher grades. White envelope cuttings are now quoted at from 3.20 to 3.30; Ordinary hard white No. 1 at from 2.45 to 2.55. Stitchless flat stock and over-issue magazine are offered at from 1.10 to 1.15. Old kraft machine compressed bales have jumped to from 1.40 to 1.50.

Twine

Trading in the local twine market is quite active now that the inventory period is out of the way. Inquiries for future delivery are fairly numerous, many of which should materialize into desirable orders. Quotations on both hard and soft fiber twines are firm, in most instances.

Visits Far East For Oliver Filters

J. H. Mitchell-Roberts, export manager for Oliver United Filters Inc., left the latter part of January for an extended trip throughout the Far East, visiting in the Philippines, Japan, Australia and other countries.

Mr. Roberts will call upon all of the company's foreign representatives in these countries and also make a comprehensive study of the sales possibilities in the mining, sugar, cement, pulp and paper, petroleum, chemical and other industries. The company's foreign business is already extensive and, with its even more diversified line of filter types than a year or two ago, expects to broaden its service to process plants throughout the entire industrial world.

Let's Look at the Record

The Smith & Thompson Paper Company, 205 East 42nd Street, New York, have recently sent out an interesting piece of direct-mail literature entitled "Let's Look at the Record."

The idea behind this piece of promotion is, first, to bring out the strong points of our tissue, and, secondly, to sell the idea of Stevens & Thompson combination car made up of toilet tissue, pie plates, towels, cabinet tissue and dishes.

IMPORTS OF PAPER AND PAPER STOCK

(Continued from page 50)

———, 905 bls. wood pulp; Bulkley Dunton & Co., *Sandhamn,* ———, 1,200 bls. wood pulp; Bulkley Dunton & Co., *Bessa,* ———, 275 bls. wood pulp; Bulkley Dunton & Co., *Karpfanger,* ———, 8,220 bls. wood pulp; Bulkley Dunton & Co., *Gunda,* ———, 7,800 bls. wood pulp; Price & Pierce, Ltd., *Bockenheim,* ———, 6,760 bls. unbleached sulphite; Washington Post, *Markland,* Liverpool, N. S., 1,598 rolls newsprint.

NORFOLK IMPORTS

WEEK ENDING JANUARY 16, 1937

N. Y. Trust Co., *Black Heron,* Rotterdam, 189 bls. bagging; Gottesman & Co. Inc., *Bockenheim,* Sweden, 16,650 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING JANUARY 16, 1937

Price & Pierce, Ltd., *Bockenheim,* ———, 9,600 bls. unbleached sulphite; Pagel Horton & Co. Inc., *Bockenheim,* Sweden, 4,583 bls. sulphite.

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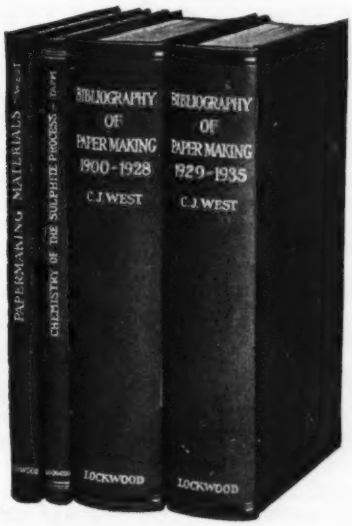

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FOR PAPER MEN

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, January 20, 1937.

BLANC FIXE.—Steadiness prevails in the blanc fixe market. Prices are holding to formerly quoted levels. The pulp is quoted at from $42.50 to $45 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Contract shipments are moving in normal volume for the season. Prices are steady. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN.—The casein market continues firm. Domestic standard ground is now quoted at 19½ and finely ground at 20 cents; while Argentine standard ground is also selling at 19½ and finely ground at 20 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Paper mill demand for caustic soda is fairly persistent. The contract movement is regular. Solid caustic soda is quoted at from $2.55 to $2.60; while the flake and ground are selling at from $2.95 to $3 per 100 pounds, in drums, at works.

CHINA CLAY.—The china clay market is displaying strength. Prices are holding to schedule without difficulty. Imported china clay is quoted at from $13 to $21 per ton, ship side; while domestic paper making clay is selling at from $6.50 to $12 per ton, at works.

CHLORINE.—Business in the chlorine market is excellent. Orders for future delivery are numerous. The contract movement is well up to average. Prices remain unchanged. Chlorine is quoted at from $2.15 to $2.25 per 100 pounds, in tank cars, at works.

ROSIN.—The rosin market is stronger. Paper making gum rosin is now quoted at $10.60 and wood rosin at $10.50 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $4.36 per 100 pounds, in tank cars, at works.

SALT CAKE.—Demand for salt cake from the paper mills is well sustained. Prices are steady. Salt cake is quoted at from $12 to $13; chrome salt cake at from $11 to $12 per ton, at works; while imported salt cake is selling at from $12 to $13 per ton, ship side.

SODA ASH.—The soda ash market is little changed. Contract shipments are moving freely. Prices are holding to schedule. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—Conditions in the starch market are fairly satisfactory. The contract movement is normal for the time of year. Prices are firm. Special paper making starch is quoted at $4 per 100 pounds, in bags; and at $4.27 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—The sulphate of alumina market is exhibiting a strong undertone. Prices are steady to firm. Commercial grades are quoted at from $1.35 to $1.60; while iron free is selling at from $2 to $2.25 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is steady. Yearly contracts are quoted at $18 per long ton, on orders of 1,000 tons, or over, and $20 on smaller quantities. On spot and near by car loads, the quotation is $21 per ton. All quotations are in car lots, at works.

TALC.—Most of the business transacted in the talc market during the past week was along routine lines. Prices are steady. Domestic talc is quoted at from $16 to $18 per ton, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

Rag Content Bond & Ledgers—Delivered Zone 1

	Bonds		Ledgers
100% Rag Ext. No. 1	[illegible]		
100% Rag	.29	@	.30
75% Rag	.22	@	.23
65% Rag	.19	@	.20
50% Rag	.15½	@	.16½
25% Rag	.13	@	.14

Sulphite Bond & Ledgers—Delivered Zone 1

	Bonds		Ledgers
No. 1 Sulphite	7.65	@	8.65
No. 2 Sulphite	6.75	@	7.75
No. 3 Sulphite	6.25	@	7.25
No. 4 Sulphite	5.50		6.50

Book, B Grade, Cased			
S. & S. C.	6.10	@	6.85
S. & S. C. Litho.	6.35	@	7.10
M. F.	5.95	@	6.60
Coated and Enamel	7.15	@	8.00
Coated Litho	7.15	@	8.00
Tissues—Per Ream—			
White No. 1	.82½	@	—
White No. 1 M. G.	.77½	@	—
White No. 1½	.62½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.67½	@	—
Colored	.80	@	—
Kraft	.67½	@	—
Manila	.60	@	—
Unbleached Toilet	2.60	@	3.30
Bleached Toilet	3.94	@	5.26
Paper Towels—			
Unbleached	2.10	@	3.35
Bleached	3.30	@	3.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75

(Delivered New York)

News, per ton—			
Roll, contract	42.50	@	—
Sheets	47.50	@	—
Kraft—			
No. 1 Northern	4.25	@	4.75
Standard	4.12½	@	4.25
Southern	4.00	@	—
Glazed	4.50	@	—
Striped	4.75	@	—
Boards, per ton—			
News	42.50	@	45.00
Chip	42.50	@	45.00
Sgl. Mla. Lt. Chip	52.50	@	55.00
Jute Lined Chip	52.50	@	55.00
Kraft Liners	67.50	@	70.00
White Pat. Coated	65.00	@	67.50
Binders Boards	70.00	@	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	29.00	@31.00
Dry	29.00	@31.00
(Delivered)		
No. 1 Domestic and Canadian	30.00	@31.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	2.70	@	3.75
Prime Qualities—			
Class 1 All Prime Easy Bleaching	2.40	@	2.90
Other Than Easy Bleaching—			
Class 2 Higher than Standard	2.40	@	2.80
Class 3 Standard	2.35	@	2.60

(On Dock, Atlantic Ports)

Kraft Bleached	3.25	@	3.75
Kraft Light & Strong	2.30	@	2.80
Kraft No. 1	2.15	@	2.70
Kraft No. 2	2.10	@	2.25
(F.o.b. Pulp Mill)			
Kraft Domestic	1.95	@	2.50
(Delivered)			
Soda Bleached	2.70	@	—

Add 60 cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	8.37½	@	8.62½
Silesias No. 1	6.75	@	7.00
New Unbleached	8.75	@	9.00
Blue Overall	6.75	@	7.00
Fancy	3.00	@	3.25
Washables	2.25	@	2.50
Mixed Khaki Cuttings	3.50	@	3.75
O. D. Khaki Cuttings	4.25	@	4.50

Old Rags

White, No. 1—			
Repacked	3.25	@	3.50
Miscellaneous	2.75	@	3.00
White, No. 2—			
Repacked	2.25	@	2.50
Miscellaneous	1.75	@	2.00
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.90	@	2.00
Roofing Rags—			
No. 1	Nominal		
No. 2	1.65	@	1.70
No. 3 (bagging)	1.50	@	1.55
No. 4	1.50	@	1.60
No. 5A	1.40	@	1.50

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.50
New Mixed Cuttings	2.00	@	2.25
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxfords	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	2.25	@	2.50
French Blue Linens	3.50	@	4.00
German Blue Linens	2.50	@	2.75
German Blue Cottons	2.00	@	2.25
Checks and Blues	2.00	@	2.25
Linsey Garments	2.25	@	2.35
Dark Cottons	2.35	@	2.45
Old Shopperies	1.75	@	2.00
New Shopperies	1.75	@	2.00
French Blues	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.25	@	2.35
Domestic	2.15	@	2.25
Wool Tares, light	1.75	@	1.85
Wool Tares, heavy	2.10	@	2.25
Bright Bagging	1.70	@	1.75
Manila Rope—			
Foreign	3.00	@	3.25
Domestic	3.25	@	3.50
Jute Strings	2.75	@	3.00
Sisal Strings	2.60	@	2.75
Mixed Strings	Nominal		

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.20	@	3.30
Ordinary Hard White No. 1	2.45	@	2.55
Hard White No. 2	2.20	@	2.30
Soft White No. 1	2.00	@	2.10
Flat Stock—			
Stitchless	1.10	@	1.15
Over issue Mag	1.10	@	1.15
Solid Flat Book	1.05	@	1.10
Crumpled No. 1	.70	@	.75
Ledger Stock	1.00	@	1.10
New B. B. Chips	.40	@	.45
Manila—			
New Env. Cut	1.90	@	2.00
New Cuttings	1.40	@	1.50
Old Kraft Machine—			
Compressed bales	1.40	@	1.50
News—			
No. 1 White News	1.40	@	1.50
Strictly Overissue	.60	@	.70
Strictly Folded	.52½	@	.57½
No. 1 Mixed Paper	.45	@	.50

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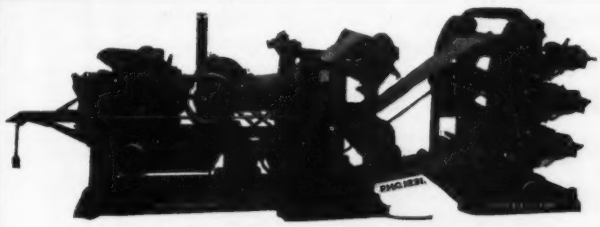

POTDEVIN

MODEL 102—HIGH SPEED

NOTION BAG MACHINE

Twines

(F. o. b. Mill)

(Soft Fibre)

Coarse Polished—			
India	.14¾	@	.17¼
Belg. White Hemp	.15¾	@	.19¼
India Compress	.15¾	@	.15¾
Fine Polished—			
Fine India	.21	@	.23
Unpolished—			
Box	.10¾	@	.11¼
Paper Makers	.10½	@	.12¾
Tube Rope	.11¾	@	.14
Wall Paper	.12½	@	.13¾
Wrapping	.16	@	.20
Soft Fiber Rope	.13¾	@	.14¼

(Hard Fibre)

Bond	.13½	@	.22
Anchor	.13	@	.14½
Manila	.21	@	.28

PHILADELPHIA

Paper

Rag Content Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—

	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, M.F.	5.00	@	—
Book, S. S. & C.	5.25	@	—
Book, Coated	6.75	@	—
Coated Lithograph	6.75	@	—
No. 1 Jute Manila	10.50	@	—
Manila Sul., No. 1	6.75	@	—
Manila No. 2	4.25	@	—
No. 1 Kraft	6.00	@	—
Southern Kraft	5.00	@	—
News Print Rolls	42.50	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.08	@	.08½
New White, No. 2.	.04½	@	.05
Light Silesias	.05½		—
Silesias, No. 1	.04½	@	.05
Black Silesias, soft.	.03½	@	.04
New Unbleached	.06	@	—
Washable, No. 1	.02	@	.02½
Blue Overall	.07	@	.07½
Cottons—According to grades—			
Washable, No. 2	.02½	@	.04½
New Blue	.02	@	.02½
Fancy	.03	@	—
New Black Soft	.04	@	.04½
New Light Seconds	.03½	@	.04
New Dark Seconds	2.00	@	2.25
Khaki Cuttings—			
No. 1 O. D.	.04	@	.04½
No. 2 Mixed	.03¼	@	.04
Corduroy	.02	@	.02¼
New Canvas	.04	@	.04½
New Black Mixed.	.02	@	.02¼

Domestic Rags (Old)

White No. 1—			
Repacked	4.00	@	4.50
Miscellaneous	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	2.00	@	2.25
Repacked	2.50	@	2.75
Black Stockings (Export)	4.50	@	5.00
Roofing Stock—			
Foreign No. 1	2.20	@	2.25
Domestic No. 1	1.50	@	1.60
Domestic No. 2	1.40	@	1.50
Roofing bagging	1.10	@	1.20

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	2.00	@	—
Domestic	2.25	@	—
Manila Rope	2.75	@	—
Sisal Rope	2.25	@	2.35
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	2.25	@	2.50
No. 2	1.00	@	1.10
Wool Tares, heavy	3.25	@	3.50
Mixed Strings	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	2.50	@	2.75

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	2.30	@	2.40
No. 2 Hard White.	2.10	@	2.20
No. 1 Soft White.	1.90	@	2.00
No. 2 Soft White.	1.40	@	1.45
No. 1 Mixed	—	@	.85
Solid Ledger Stock.	1.50	@	1.60
Ledger Stock, white.	1.30	@	1.35
Ledger Stock, colored	1.00	@	1.10
No. 1 Books, heavy	.90	@	1.00
Manila Cuttings	1.80	@	1.90
Print Manila	.55	@	.60
Container Manila	.55	@	.60
Kraft Paper	1.10	@	1.20
No. 1 Mixed Paper.	.45	@	.50
Straw Board Chip.	.40	@	—
Binders Board Chip.	.40	@	—
Corrugated Board	.60	@	.65
Overissue News	.75	@	.80
Old Newspapers	.55	@	.60

BOSTON

Paper

Rag Content Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	7.65	8.65
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.25	7.25
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¼	@	—
No. 2 Kraft	.04¼	@	—

(Delivered New England points)

Southern Kraft	.04	@	—
News Print Rolls	42.00	@	—
Straw Board, rolls	.009	@	35.00
Filled News Board	45.00	@	47.50
Chip Board	42.50	@	45.00
Single Manila Lined Chip	52.50	@	57.50
Single White, Patent Coated News Board			
(Bender)	65.00	@	70.00
Wood Pulp Board	70.00	@	75.00
Binder Boards (Standard Grade)	70.00	@	—

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White.	2.20	@	2.35
No. 1 Soft White.	1.85	@	2.15
No. 2 Mixed.	.75	@	.80
Solid Ledger Books.	1.50	@	1.75
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.85	@	.90
No. 1 Books, heavy	1.00	@	1.10
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.50	@	1.60
Manila Env. Cuttings, extra quality	1.75	@	1.85
No. 1 Old Manila	.80	@	.85
White Blank News	1.25	@	1.30
No. 1 Kraft	1.35	@	1.40
Mixed Papers	.42½	@	.47½
Print Manila	.60	@	.70
Container Manilas	.27½	@	—
Old Newspapers	.50	@	.55
Overissue News	.50	@	.65
Box Board Chips	.40	@	.45
Transmission Rope	1.35	@	1.50
Corrugated Boxes	.55	@	.60
Kraft corrugated boxes	1.15	@	1.20
Screening Wrappers	.60	@	.65

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	3.10	@	3.30
Domestic	3.00	@	3.30
Jute Rope	2.12½	@	2.25
Soft Jute Strings	2.50	@	2.62½
Jute Carpet Threads	1.75	@	2.00
Gunny No. 1—			
Foreign	2.25	@	2.35
Domestic	2.10	@	2.20
Bleachery Burlap	4.25	@	4.50
Scrap Burlap—			
Foreign	2.10	@	2.15
Domestic	2.10	@	2.20
Scrap Sisal	2.25	@	2.35
Scrap Sisal for Shredding	2.25	@	2.50
Wool Tares, heavy	2.10	@	2.25
New Burlap Cuttings	2.60	@	2.85
Aust. Wool Pouches	2.75	@	3.00
Heavy Baling Bagging	2.40	@	2.75
Paper Mill Bagging	1.75	@	1.80
Bagging No. 2	1.50	@	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.03½	@	.03¾
New White No. 1	.08¼	@	.08½
New White No. 2	.05½	@	.06
Silesias No. 1	.06¾	@	.07
New Black Silesias	.04	@	.04¼
Soft Unbleached	.08¾	@	.09
Blue Chevoit	.07	@	.07¼
Fancy	.03¼	@	.03½
Washable	.02¾	@	.03
Cottons—According to grades—			
Blue Overalls	.07	@	.07¼
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04½
O. D. Khaki	.04½	@	.04¾
Corduroy	.03	@	.03¾
New Canvas	—	@	.05
B.V.D. Cuttings	.08	@	.08½

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.75	@	2.00
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	3.90	@	4.00
Roofing Stock—			
No. 1	1.75	@	1.85
No. 2	1.65	@	1.70
No. 3	1.30	@	1.35

Foreign Rags

(F. o. b. Boston)

Dark Cottons	2.25	@	2.50
New White Shirt Cuttings	6.50	@	6.75
Dutch Blues	2.25	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	2.25	@	2.35
Old Linsey Garments	2.65	@	2.85
New Silesias	6.00	@	6.50

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.12	@	.40
Water Marked Sulphite Bond	.06¾	@	.11
Sulphite Bond	.05½	@	.07¼
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¾
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	42.00	@	—
Sheets, open	47.00	@	—
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent Coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	1.70	@	2.00
No. 1 Hard White.	1.40	@	1.65
No. 1 Soft White.	1.25	@	1.50
Ledger & Writings	.60	@	.70
Solid Books	.50	@	.60
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45
Old Newspapers—			
No. 1 Folded News	.42½	@	.45
No. 1 Mixed Paper	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White	.35½	@	—
No. 1 Tints	.36½	@	—
No. 2 White	.26½	@	—
No. 2 Tints	.27½	@	—
No. 4 White	.14½	@	—
No. 4 Tints	.15½	@	—
No. 5 Bond—White	.10¾	@	—
No. 5 Bond—Tints	.11¾	@	—
No. 5 Bond—Golden Rod	.12¾	@	—
No. 5 Ledger—White	.11¼	@	—
No. 5 Ledger—Tints.	.12¼	@	—
No. 6 Bond—White	.10	@	—
No. 6 Bond—Tints	.10½	@	—
No. 6 Bond—Golden Rod	.12	@	—
No. 7 Bond—White	.08¼	@	—
No. 7 Bond—Tints	.08¾	@	—
No. 7 Bond—Golden Rod	.10¼	@	—
Book—			
No. 1 M. F.	6.50	@	6.75
No. 2 M. F.	6.25	@	6.50
No. 3 M. F.	5.00	@	5.35
No. 1 S. C.	7.00	@	7.50
No. 2 S. C.	6.50	@	7.00
No. 3 S. C.	5.50	@	6.00
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown	4.75	@	—
White Wrap	3.50	@	—
"B" Manila	4.80	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft, No. 2	5.40	@	—

(F. o. b. Cars Toronto)

News, per ton—	
Rolls (contract)	Nominal
Sheets	Nominal

Pulp

Ground wood	28.00	@	—
Unbleached Sulphite	46.00	@	—
Book (Class 1)	60.00	@	—
Writing (Class 2)	61.00	@	—
Select (Class 3)	62.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut.	2.00	@	2.25
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.80	@	.90
Light and Crumpled Book Stock	.70	@	.80
Ledgers and Writings	.90	@	1.00
Manilas—			
New Manila Cut.	1.20	@	1.40
Printed Manilas	.55	@	—
Kraft	1.00	@	1.60
News and Scrap—			
Strictly Overissue	.55	@	.60
Strictly Folded	.50	@	.55
No. 1 Mixed Paper	.40	@	.45

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.07	@	.08¼
Fancy Shirt Cuttings	.03	@	.03½